The Builder.

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Construction of Hospitals.—The Ground Plan.

"HOSPITALS," wrote an eminent French physician of the last century, "are a curse to civilization."

"Hospitals," said Sir John Pringle, "are the chief cause of mortality in armies."

It is not sickness, nor defective medical treatment, nor bungling surgical operations, which the great surgeon blames for the mortality. The medical treatment may be of the most perfect order, and yet be of little avail, if the buildings are bad or are overcrowded. Given a crowded, ill-ventilated hospital, and we are sure to have a high mortality; given the Hôtel Dieu, with its thousands of sick lying five and six in a bed, as was sometimes the case seventy or eighty years ago, and it is quite certain that a fourth part of all sick and wounded who enter such an hospital will be carried out of it to the cemeteries. Given an hospital for fever cases, in which there are four ranges of beds between the opposite windows, and no sufficient means to prevent the stagnation of air by changing it frequently, and we need not be surprised that, even in this temperate climate, we have a mortality of ten and eleven per cent. on the cases treated.*

Can we avoid by any structural arrangements such excess of mortality? This is the great question to be decided by hospital architects. Experience replies that there are many illustrations of masses of sick, who, having been treated in the open air, have escaped with few deaths; of large numbers treated in properly-constructed tents, and in small wooden huts, who have also recovered. Even the famine-stricken fever population of Ireland exhibited a marked contrast in the small mortality of cases treated under hedges, in the open air, as compared with the same class of cases treated in workhouses and in hospitals. In like manner, in the large, but at first overcrowded, badly-drained, and badly-ventilated hospitals at Scutari, the mortality rose as high as 42·7 per cent. on cases treated. In the wooden huts of the Castle Hospital above Balaclava, which only held from fifteen to thirty patients each, the mortality was under three per cent. of the cases treated. In the large overcrowded and badly-ventilated hospitals of the Peninsular army, the mortality was so great that they had to be closed, and the sick to be sub-divided amongst a number of separate buildings. The old idea that fresh air was dangerous, and that warmth must be obtained and preserved even for small-pox and fever patients, has been done away with. A small-pox patient will have more chance of recovery if placed on clean straw under an open shed and covered with blankets, than in many private rooms, or in most hospital wards. Small-pox cases have been so treated, and without loss.

After the pestilential hospitals at Scutari had been cleansed, ventilated, and regulated according to the plans and under the directions of the sanitary commission, the deaths among the sick there did not much exceed the deaths among healthy guardsmen at home.

The lesson taught by all experience is, therefore, that large hospitals, as generally built and managed, are destructive of human life, unless extraordinary precautions be taken, and that it would be safer, as a general rule, in the absence of such precautions, to treat large numbers of sick in the open air. But we *must* have hospitals, and it is only by subdivision of the sick among a number of separate buildings, by relatively large cubic space, and by ample ventilation, that we can make hospitals furnish a minimum rate of mortality and a minimum duration of cases.

Large, rambling, low-roomed buildings, like old mansion-houses, are utterly unfit to receive sick. Their wards, or rather their badly-constructed, ill-arranged rooms, are hardly adapted for the smallest families of healthy people to live in, much less for numbers of helpless sick people to recover in.

Given a building like Netley Hospital, with 500 sick confined to bed under one roof, in a series of cells communicating with each other by corridors and staircases, and we have not our own intelligence to thank if the sick are not carried off by hospital epidemics. There *is* a certain ratio between the number of sick placed in a building, and the amount of mortality. We know that, of the sick who were treated in the Crimea, almost exposed to the elements, during the frightful winter of 1854-55, not above one-half so many in proportion died, as perished in the great hospitals at Scutari during the same time. In the Crimea, the sick were aggregated, twenty or thirty together. In the hospitals at Scutari, there were, at one time, crowded under one roof, upwards of 4,000 sick, wounded, and healthy men. The subdivision of the sick and wounded should therefore be made a primary object in all hospital construction.

To what extent should this subdivision be carried? We apprehend that the point must be determined by the two-fold consideration of uniting the greatest advantages as to health, with the greatest facilities as to administration and economy.

And, first, we would lay down the principle that no hospital should be more than two flats in height. By such a construction, the sick are spread over a wider area, the walls are not so high as to interfere with sunlight and ventilation of neighbouring pavilions, the accumulation of hospital miasms in upper flats is avoided, access to the wards is easier for patients and attendants, and the whole administration is much facilitated. "It will cost a great sum for land to build an hospital with only two flats," will say the hospital economist. No doubt it will cost more money to accommodate a given number of sick in an hospital of two than in one of four flats. But the question has been discussed and decided notwithstanding, that the hospital of two flats is better than one of additional stories, and many hospitals of two flats have been built. Those of St. Jean and St. Pierre, at Brussels, have each two flats, and land is dear enough in Brussels. In this country also, land, in towns, has been used for building hospitals of two flats high. But even admitting the argument of the expensiveness of land as being entirely valid, the conclusion is certainly, not that hospitals three and four flats high should be built in towns; but, that hospitals should be built in the country where land is less expensive. It is little else than a breach of trust to build great lofty architectural structures merely to flatter the bad taste of committees or governors; or to place the hospital in a close unhealthy neighbourhood, to suit the convenience of medical attendants, when the object of the whole ought to be, recovery of the sick.

The number of sick which may be safely placed under one roof will, to a certain extent, be determined by the local position of the hospital, by the amount of cubic space allotted to the patients, and by the state of ventilation. In the most recent hospitals the number varies considerably. Thus, in the Royal Marine Hospital, which is at present being erected at Woolwich, 84 sick are to be accommodated under one roof. In the proposed hospital at Aldershott there will be arrangements for about 100. In each of the hospital blocks at Beaujon, in Paris, there are arrangements for 60 sick. In the magnificent hospital Lariboisière, at Paris, the number is 103 per block. At the hospital St. Jean, at Brussels, it is about 88.

Too great a subdivision of sick must necessarily incur an increase of cost in administration and nursing. On examining the experience of all these hospitals, we are of opinion that from 100 to 120 sick may be safely and economically treated under one roof, provided the ventilation and cubic space be sufficient, and the structure and communications of the building be so arranged as to facilitate the administration and nursing.

The next important question is, how to arrange buildings so as to have pure air outside and inside the structure.

The air must be "moving air" in mass. The motion of the air in any room should never exceed a velocity of two feet and a half per minute, and should not be at any time much below this rate. There must be no "stagnation." It is a great error to imagine that because buildings are erected around a large court, therefore they are airy enough. A court, with high walls round it, does one thing with certainty,—it stagnates the air. All closed courts, narrow *culs-de-sac*, high adjacent walls, closed angles, overshadowing trees, and other obstructions to outer ventilation should be sedulously avoided, at whatever cost. Plan the building so that the sunlight can strike as large a surface of it as possible, and so that the air may move freely over the whole external surface.

Figures 1, 2, and 3* represent arrangements of buildings at present occupied for hospital purposes, which ought to be carefully avoided.

It may be considered certain that, wherever such arrangements exist, injury to the sick is so constant that, were it practicable, all the angles should be opened to admit of the circulation of air.

The simplest form of structure for ensuring light and ventilation is to build hospital wards in a straight line, fig. 4, with windows on both sides, *i.e.* back and front; the lengthway of the ward being the lengthway of the building, and the administration in the centre. By such an arrangement as this, however, no more than four wards could be obtained, if the building were two stories high. For small hospitals not exceeding 120 sick this plan would be economical and efficient. The direction of the axis of such a building should be from north to south, a little inclining to the east, which would ensure the sun shining on both sides every day of the year, and would also protect the wards from north-east winds.

One staircase would suffice for an hospital such

* In our last article on Hospitals (see *Builder*, of August 28), we gave the annual mortality of hospitals as 7 to 10 or 11 per cent. So stated, the mortality appears much less than it really is. The deaths on *cases treated*, may be fairly stated at 7, 10, and 11 per cent. When the element *per annum*, is introduced, it must refer of necessity to the number of beds constantly occupied by sick. And, if we apply this test to the hospitals whose deaths to cases treated we have given above, we find the *annual* mortality mount up to 85, 110, and 134 per cent. This estimate, however, depends to a great extent on the rapidity with which the cases pass through hospital, as well as upon the mortality on the cases treated. The mortality on the cases treated in the metropolitan hospitals varies between four and a half per cent. and nearly sixteen per cent. Even this enormous mortality is a trifle when compared with the mortality in the metropolitan lunatic asylums. It varies from 9 to 10, 20, 25, up to nearly 42 per cent. of the cases which enter their destructive precincts. Surely there is "something rotten in the state of Denmark."

* See p. 611.

as this. If it were carried from the bottom to the top of the building, and ventilated above the roof, it would cut off entirely one set of wards from the other, which is all that is necessary to prevent the possibility of any intermingling of foul air.

By adding projecting wings at the ends of such a line of building, as in figs. 5 and 6, additional ward space might be obtained.

But additional staircases also there must then be at the ends, and such a building would have the disadvantage of a closed angle, although this would be of less consequence, if the wings were very short in proportion to the length of the front.

A much better arrangement is represented in fig. 7, in which the wings are entirely detached from the centre, and connected with it only by an open corridor on the lower floor. This is the plan adopted in the great military hospital at Vincennes, and is a very good one for hospitals of a certain size, for the open angles permit air to circulate freely round the building. All of these plans, however, have the disadvantage of not admitting extension beyond a certain limit. The only plan which allows as much extension as can be necessary in any single hospital up to (say) 1,000 sick (beyond which hospital management becomes very difficult), is the plan adopted in the hospital at Bordeaux, of which we gave an engraving in our volume for 1856; or still better, that of the Lariboisière at Paris. In that fine hospital, each block containing 102 sick constitutes a separate hospital. There are six of these blocks, which are arranged parallel to each other on two opposite sides of a square. And there are four blocks containing the administrative and other offices. The kind of arrangement is represented in fig. 8.*

All the blocks are joined together by a glazed corridor along the lower flat, and by an open terrace above for convalescents taking exercise. In such a building, for the sake of sunlight, the axis of the wards should run nearly from north to south, and the distance of the blocks from each other should be about twice the height of the side walls.

We have given these illustrations of the arrangement of hospital buildings to show the more recent improvements in this important matter. Whether any of these or any better arrangement be adopted in building an hospital, it should be kept in mind that the great objects aimed at are, subdivision of the sick, free ventilation outside and inside the buildings, abundance of light, and windows on opposite sides of the wards, the heads of the beds being between the windows.

An hospital for 1,000 sick ought to have none of its offices in duplicate. It should have one kitchen, so situated that the diets can be easily carried to any ward, and in the shortest space of time to all. The kitchen should be separately ventilated, and should not be under any part of the building used for sick. The laundry should be at a distance from the hospital, and in no way connected with it. The offices of the administration should be conveniently situated, not only for facility of access, but for efficiency of superintendence. This point was quite lost sight of in the Netley plans, in which, if the unfortunate governor happened to be wanted at the two extremities of the building successively, he would have to walk half a mile; while, with such a plan as that of Lariboisière, he could in the same time walk all round the buildings.

No sewer nor drain should pass under any part of the hospital where there are sick. Sewers and drains should be outside, and free even of the external walls; there should be means of ventilation in abundance; there should be means of inspection and for flushing. The water-supply should be of the purest and softest description. It should be laid over the whole building hot and cold. This arrangement, together with that of lifts, saves the service of at least one attendant to every thirty sick. For water-supply, there should be a water tower and tank placed centrally, affording water under high pressure. The mains should be of cast iron, varnished; the service-pipes should be of wrought iron; there should not be any cisterns, but the supply should be constant. Fire-cocks, or "hydrants," should be placed at short intervals. Each supply-tap should have a waste-sink underneath it, and these should be placed so as to save labour. Waterclosets must be external, but near the wards, and under such arrangement of plan as to prevent any possibility of atmospheric contamination. There should be not less than one closet to each ten patients. Lavatories should also be in like proportion. Warm, cold, and shower-baths should also be easy of access on each floor. All staircases and passages should be wide, light, and airy. This is a most important consideration in hospitals. The steps should consist of stone, but they may be covered with wood, as in some of the French hospitals. Stone is essential to prevent accidents from fire. All hospitals should have convalescent wards, supplied with dining and day rooms. In the pavilion structure these can be placed under a separate roof. Casualty wards and small wards for special cases should be placed in a separate part of the hospital.

The square within the hospital, and the spaces between the pavilions, should be laid out as garden ground, with well-drained and rolled walks, and shaded seats for convalescents.

It is of great importance to provide places of exercise under shelter, for patients, to be appropriated to that purpose alone. Such recreation and winter-airing grounds may be comparatively large, and yet of cheap construction, if roofed on the Crystal Palace plan. The country can alone offer all the necessary facilities for the establishment of such valuable aids to hospitals.

In a future number we shall discuss the structure and the arrangements of hospital wards.

* In an early number we shall give a detail plan of this hospital.

SHORE LIGHTHOUSES.

TOUCHING the suggestions, under this head, which appeared in our last, we have received a communication from Mr. Alexander Gordon, denying that the "best sperm oil is at present used in most lighthouses." Mr. Gordon says,—I continued the use of that, the best of oils for illumination, longer than any other lighthouse engineer. I had been vainly hoping for cocoa-nut oil in Jamaica, and therefore continued in that colony to use sperm, until it could only be had there at a cost of about 9s. 6d. per gallon. For many years all lighthouses in France, Belgium, Holland, and all British lights at home, had abandoned sperm oil, and adopted colza, or rape oil, which costs less than half the price of sperm. This (vegetable) oil, has also been in use for some years in many of my lighthouses abroad,—at Barbadoes, and in the Bahamas, to the exclusion of sperm. In Newfoundland, I began with sperm oil, but at once changed to *seal* oil; and in my last lighthouse, at Cape Race, in that colony, succeeded in establishing the use of the above-mentioned vegetable oil. In Ceylon and other very hot climates, where cocoa-nut oil can be had in a constantly liquid state, that oil is the best of all. In one of my lighthouses we have it supplied at about eightpence per gallon, and in several others in progress in hot climates, I hope to see the same efficient and economical oil used.

At the Cape of Good Hope I am now putting up two new lighthouses. There we shall certainly not burn "the best sperm oil," neither shall we use the oil from sheeps' tail tips, costing 12s. 6d. per gallon, with which that colony indulged itself, until I succeeded in waking up inquiry as to the management of colonial lights.

You insist upon the use of gas in (all?) shore lighthouses, and at the same time admit that there may be danger; and the use of gas is pressed upon your readers' attention as promising a saving of "several thousands of pounds annually." I prefer incurring no "dangers of enormous magnitude," and I deny the promised economy of gas for lighthouse purposes generally, where permanent efficiency is indispensably necessary.

That "sperm-oil is said to be more difficult to obtain than formerly," and "is certainly more costly," no one can deny, and it may be more costly still. As a lubrication for machinery, by which manufacturers can obtain more revolutions of their spindles, it will continue to be used, and I believe 20s. or 30s. per gallon, as a market price, would not prevent manufacturers using it in preference to any other lubrication, which would delay their work.

You are led to say, "that it is a disgrace to our Government to allow any risk to exist" from the superior (?) railway "signals by gas" at "coast railway stations, as if they had never caused loss to merchandize, and to human life." If, indeed, very bright railway signals are not blinded, or screened, on the seaward, the companies are to blame, and so may be the Railway Department of the Board of Trade; but until it can be shown that "merchandize and human life" have suffered therefrom on the seaboard, the Government are not to be charged with "disgraceful" neglect.

ALEXANDER GORDON.

There is a little acerbity in the communication, for which we cannot find a reason. Admit that the "best *sperm*" oil be not used in lighthouses to the extent it was a few years ago, and that colza or rape, or other oils, may have taken its place in most, if not all, of our lighthouses;—and what of that? The question is, will coal-gas be cheaper for shore-lights than any oil?—and will it be perfectly safe, as well as more economical? The answer to such questions, if yes, ought to induce the authorities to see to the introduction of coal-gas as soon as practicable. We did not "insist" upon the use of gas: we but urged inquiry, and we urge it again.

In 1834, there existed, it would seem, 168 lighthouses on the coasts, or at the entrances of harbours in Great Britain. There were also twenty floating lights. The gross sums annually collected in light-dues amounted to 240,304*l*. The charges of collection being 22,135*l*. and the expenses of maintenance 74,832*l*. left a surplus of 143,337*l*.

Mr. Clegg states that the best Wigan coal will make gas at a cost of 1s. 3½d. per 1,000 feet; Boghead at 11d. per 1,000 feet. Coal-gas is less impure than rape or colza oil, in the proportion of 1 to 2, and gives less heat in rather less proportions. These features of coal-gas give it an advantage for use in lighthouses over any oil, in addition to the cheapness.

With respect to shore railway signal-lights, let Government inquire if these have caused accidents to shipping, and, if so, surely a proper masking of them ought to be insisted on. The inquiry may be commenced at Berwick. Even if accident have not occurred, but *may*, they should be masked. We cannot admit Mr. Gordon's argument that Government is not to be blamed till "merchandise and human life have suffered."

These hints may be taken for what they are worth. They have no personal bearing, and surely need not disturb any one.

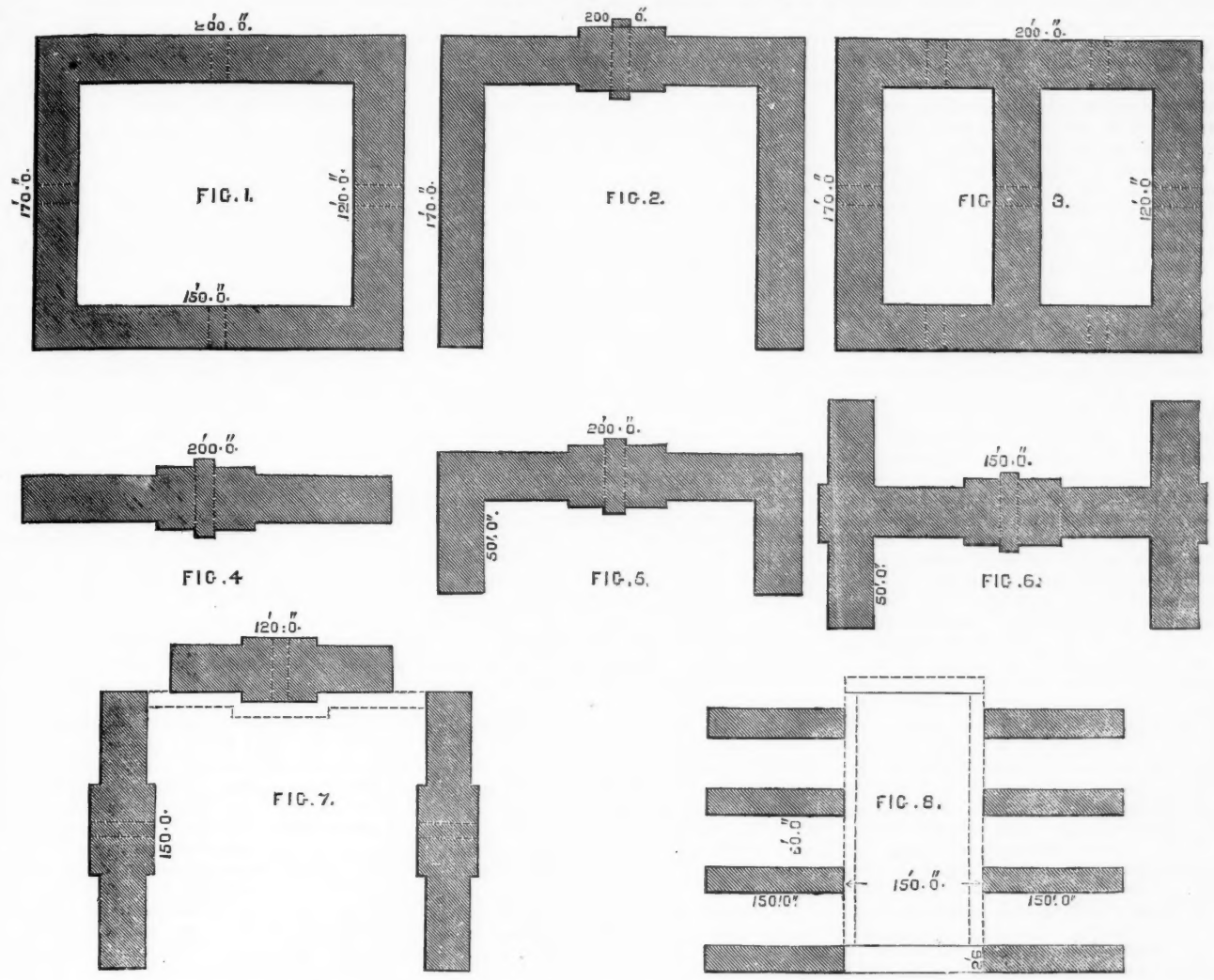
DRAWING-BOOKS.*

SYSTEMS of instruction in those processes subservient to art, comprised under DRAWING in its widest acceptation, continue to receive attention from the Department which has wisely charged itself with the popular education upon which the desired advancement in all art ultimately depends. To devise such methods, and to succeed in imparting the skill and knowledge to others, obviously require gifts not necessarily possessed by one who has the knowledge, and has entered upon the pursuit. The difficulty of teaching by books is under any circumstances great. Perspective, of which an architectural student may learn, by an hour's *vivâ voce* instruction, nearly all that he can gain except through his own work,—under the hands of a Peter Nicholson swells out into a volume with diagrams which are complicated and repulsive, and which are defective through attempting what must be the office of models. The case as to instruction in the method—other than perspective—of representing objects—or by plans elevations, and sections—is precisely similar; and we would undertake that a student, with very few directions, and set to work at the representation of the room he is in, with its furniture, should

* "An Elementary Treatise on Orthographic Projection; being a new Method of Teaching the Science of Mechanical and Engineering Drawing, intended for the Instruction of Engineers, Architects, Builders, Smiths, Masons, and Bricklayers, and for the use of Schools: with numerous illustrations on wood and steel." By William Binns, Assoc. Inst. C.E., Master of the Mechanical Drawing-Class at the Department of Science and Art, and at the Government School of Mines; late Professor of Applied Mechanics at the College for Civil Engineers, &c. &c. 8vo. pp. xiv. and 138. London: E. and F. N. Spon. 1857.

"The Amateur's Drawing Manual, and Basis of Study for the Professional Artist: comprehending Elementary Drawing, Perspective, Sketching from Nature, Painting, Etching, and Engraving; Modelling and Composition; especially adapted to the use of Public and Private Schools, as well as Home Instruction." By J. G. Chapman, N.A. 4to. pp. viii. and 304,—many illustrations. London: Sampson Low, Son, and Co. Edinburgh: Thomas Constable and Co. 1858.

THE GROUND-PLAN OF HOSPITALS.



find himself, at the end of such work, better able to produce a set of drawings—say of a building—than he would be after far longer time given to the perusal of the best treatise on "orthographic projection." The attempts, however, that are made at instruction by books are not to be discountenanced: of course, these must often comprise the only instruction that the student can get; and, moreover, works such as either of those which are the subject of the present notice, tend to supply a want, that of occasional reference, felt even by those who have passed the elementary stages.

The instruction in art-processes, now recognized as needed as well by the general public as by the professional student, is aimed at in the book of which the title stands second in our note. It is far more comprehensive in its attempted range than the other work, the subject of which, indeed, it hardly notices, though what it says specially of "drawing on stone or lithography"—to wit, and not a word more than that it "is of an easy acquirement to any one who can use the pencil or crayon with facility"—may show that its author has not supplied all that was consistent with his aim, or as to some branches of his subject. It affords us, however, great satisfaction that there should come from America, a work which, if it have the circulation it deserves, cannot but greatly promote the study and advancement of art there, so greatly needed; and a work also which is suggestive and useful for objects of art-education in our own country. Its general purpose, and the manner in which arguments and explanations of the text are aided *pari passu* by well-chosen illustrations, of which there is profusion, deserve high commendation. The book is peculiarly one which it is pleasant to look at and agreeable to study from. It would be well that English authors and publishers, whose illustrations are often stinted, from considerations of expense, below the positive requirements of explanation, should consider how the illustrations in the book before us (which are all printed with the text) have been produced. Judging from the quantity of cross-hatching, they are not wood-engravings, and, if produced by *xylography*, or surface printing from copper, the method in use must, we think, have been attended with rather better success than that in England. Some of the illustrations are, however, defective in the shading to the hollows or undulations of the objects represented, as in the case of many of those of the human countenance and the "extremities."

The author begins with our position of years ago, that "any one who can learn to write can learn to draw;" and throughout his book he advocates instruction in both accomplishments, primarily and contemporaneously, as both useful, and serving each the other. He, however, does not mistake drawing for *art;* whilst he properly animadverts on much of the so-called instruction in drawing which has been common in schools, and which serves no purpose whatever. Still he shows that a knowledge of design gives advantages even for making a copy. The deficiency in the work, as it strikes us forcibly, is under one of the heads of instruction which we spoke of at the commencement of this notice. There is a chapter on Perspective, besides sections on "the Elements of Geometry," and "Studying and Sketching from Nature;" but useful as this chapter is, there is no information which could fairly serve the student in the representation of objects in oblique perspective. "Vanishing points" are hardly spoken of; and the mode of finding those points where objects are viewed as referred to, is not noticed. This, perhaps, results from the omission of the subject of "orthographic projection." The chapter relates to little more than parallel perspective; but there are some useful suggestions on the representation of interiors in one of the other chapters, or with reference to choice of the station point for the view.

The omission which is so common in books intended chiefly for amateurs, or for painters, might help us to the explanation we have long wanted, as to the reason of the serious ignorance of perspective displayed annually in the oil-pictures in the exhibitions. The best course for acquiring the knowledge is undoubtedly through the initiatory stage of geometric drawing; because that mode of representation alone shows the object as it is.

It would have materially enhanced the value of the work of Mr. Binns, had he *at the outset* explained the respective uses of perspective drawing and "orthographic projection." But we look in vain for that explanation of the first which would allow the student to understand readily the use of the other. For the want of this, and the absence of a precise definition of "orthographic projection," many students would go through the treatise, and be left ignorant of the meaning or application of the term. The "familiar illustration," by the window-pane, of the elevations of objects (or representations "in the vertical plane"), involves an obvious error—one that can only create confusion between the different modes of representation, whereof one shows, as nearly as "perspective" can, the object as it appears, and from a given point—the other, by a combination in which each drawing of a superficies, or sectional form, bears a part, or represents a phase of the mass, conveys the representation, or rather mental reflection, of the object exactly as it is. He correctly mentions, however, that in orthographic projection the eye is supposed to move over the object, or rather to remain always directly opposite to every part represented,—the visual rays being, therefore, supposed parallel, while in perspective they converge to a point supposed to be that of an immovable eye. An analogous instance of what we think defective in the book, is seen in the "Problem III.,—The End Elevation of an object being given, to find the plan thereof,"—which is not logically stated; for, only a few lines below that, the truth appears that more than an end elevation would have to be "given," or nothing whatever as to plan could be arrived at. The defect in explanation, though remedied in the sequel, is an important one: because the fact that an elevation or a plan, by itself, is as nothing for representation, is that which should be in the very first stage of instruction made evident to the student, and that which is so much required to be known by the general public to ensure knowledge of the system of representation which is used in drawings of buildings, machinery, and contrivances of every description. We are by no means finding fault with Mr. Binns's book in saying that the whole subject could be conveyed more readily, both to

the general public and the student, with the aid of drawings from models or from the buildings and machines themselves. The author himself appears to feel this, inasmuch as the student's case of instruments and pencil are brought into use in several of the explanations. The method of illustration by models, we ought to say, has been adopted by others in lectures, as it is now by Mr. Binns, and in either case with the best results. In the process of instruction, we are inclined to recommend primarily the explanation of the "section," because the section, or the drawing thereof, is precisely what has to be represented in every case,—sometimes by supposed tracing of the section or the new face exposed in the object itself, as in the instance of the horizontal and vertical sections of walls; and at other times as in elevations and roof plans, by the section of the combined parallel lines which are supposed to be projected horizontally or vertically. It is a question how far any one who could understand this much would require a treatise. In the book before us, the "Architect," "Mason," or "Bricklayer," for some time would scarcely recognise the explanation of much that he has learned in a different manner: to such classes, however, ready familiarity with the modes of the "projection of objects on the inclined plane," "the projection of curved lines," and that "of conic sections;" "the penetration and intersection of solids," and "the development of the curved surfaces of cylinders and cones," which form the heads of the later chapters, and which subjects are amply illustrated by woodcuts and by plates opening out of the book clear for reference, is important; and the explanatory methods have, doubtless, been very well considered; and by many having the ordinary knowledge as regards the objects of more simple form in architecture and mechanical engineering, might be studied with advantage. For primary study the *vivâ voce* instruction is best, and is, perhaps, absolutely required. The system has been adopted, we believe, in the Art-Schools connected with the Department of Science and Art, throughout the kingdom.

Mr. Chapman's work not only affords "primary instruction in drawing" (wherein we might say, it *includes* writing), and gives "rudiments of drawing the human head," the "extremities" and the figure, and many objects of nature and art, together with the "Elements of Geometry" and "Perspective;" but has a good chapter on "Studying and Sketching from Nature;" one on "Painting," and the several methods and vehicles; one on Etching and Engraving, including Wood-Engraving; one on Modelling, and a final chapter on "Composition." Of course there are some of these subjects which are not gone into at much length; but enough is generally afforded to set the student well on his way; and the general views inculcated as to study, and as to the American and everywhere national interest in art, which extend to a considerable portion of this book, deserve a warm approval, and might deserve quotation had we space. The recommendation as to the use of the pen rather than the pencil and india-rubber, for practice in drawing, because the former compels accuracy, may be attended to with advantage. The work is one that we should like to see extensively read and studied from.

THE LIONS FOR THE NELSON COLUMN.

IF lions are to occupy the four pedestals at the base of this column, two or three questions naturally arise about them, the most important being, perhaps,—Are they to be treated, specially, sculpturally, or architecturally? or rather, perhaps, I should say as statues representing a group of four living lions, and, therefore, varied in their attitudes; or more as architectural monuments, as which they would be less varied, and much more broad and general in treatment? It may be said that the British lion is, as an emblem, single: are the proposed examples to be four British lions, or merely four lions?

As architectural features merely, supposing them to be treated in a broad Egyptian manner, there could be no objection to their repetition. A mere architectural feature may be repeated over and over again with perfect propriety, and yet not give the idea of a multitude of individualities; but if these lions are to be worked up to a full and perfect representation of the species *Leo*, of the genus *Felis*, and they are to be varied with all the resources of the sculptor's art, they may be most successful as specimens of sculpture, but not so much so as architectural ornaments, and also may be deficient in the quality of the unity attaching to our idea of the "British Lion."

Of these two modes of treatment it appears that the chief commissioner leans towards the actual, and not the symbolic, if one may judge from his having entrusted the superintendence of them (for I suppose that nothing beyond this is intended) to our admirable animal painter, Sir Edwin Landseer. In the works of no artist, perhaps, is life-like actuality a more prominent element than in those of this distinguished painter. The very felt of his rabbits seems as if you could blow it apart, but a colossal granite lion is a very different matter, and will not, I fancy, be a success unless considerably idealized. It strikes me, indeed, as just possible (if indeed the project, as it stands, takes effect), after the exercise of great talent, both in the sculptor or sculptors employed, and of great attention and many hours of supervision by Sir E. Landseer, that, when the lions may be put up (a varied group of excellent examples of the *Felis Leo*), a visit to the British Museum might suggest to us that, perhaps, after all, they would have been much better and more impressive had they been treated more in the manner of those two noble examples of lions (as emblems) which were brought over by Lord Prudhoe from Egypt.

I confess I lean towards these, and in the opposite direction to that to which, I fancy, the Chief Commissioner inclines; for it appears to me that it might be better that the granite lions should be rather symbolic than very vital and varied, and rather treated as architectural features than as varied statues of the noble beast. Let us recollect, there is one lion already on the top of Northumberland House, in a very animated attitude: what will be the effect of four more down below, also in animated attitudes?

Lions are known to go in twos or threes, or in even larger numbers, and to join their forces to pull down some nobler animals of the chase; but we do not fancy British lions to be among these. Sparrman gives an account of seeing a huge bicorned rhinoceros go into a little thicket, not far from the traveller's path, when suddenly out at the other side rushed eight lions immediately away into the plain, with their tails up, and with an air of amazement. Their rapid retirement needs no comment; but we should not expect the British Lion to do likewise. Indeed, I doubt if we expect this legendary animal to do anything in companies. Could we hear him roar, we should expect but one voice, solitary and like thunder: when he emerged on our view, we should expect to see him alone. To borrow, indeed, the expression of the showman, and apply it to the British Lion, our impression of him appears to be that he is "a unique animal."

Even when the subject was under discussion in our House of "legislative and collective wisdom," there was some sort of small joking about four red lions! the number seemed to tickle the fancy of some of the members. Gravity in the treatment of these works seems therefore to be the more desirable, and an Egyptian symbolic and strictly architectonic breadth of manner might accordingly present advantages not to be reached by a greater degree of detail. No one, I fancy, feels inclined to smile when looking at the granite recumbent lions I have alluded to in the Museum, although they are "red lions." EPSILON.

ALTERATIONS AT THE UNITED SERVICE CLUB, PALL-MALL.

THE United Service Club-house was erected about the year 1826, or somewhat more than thirty years ago. The architect was John Nash. The building is now undergoing repairs, internally as well as externally; and considerable additions are being made, chiefly by the extension of the frontage, which is to include the site of the house adjoining. The kitchen and offices, it may be recollected, extend from the club eastward, or were at the back of the house referred to. They are on the ground-floor, instead of as in the other London clubs: and we recollect that at the time of the competition for the Army and Navy Club, the arrangement was pointed to as having many advantages. The useless portico in the front to Waterloo-place, has been removed, and the two rooms in the ground-floor on that side have been thrown into one, an iron-boxed girder being placed for the support of the upper portion of the original cross wall. The entrance-hall is being extended to the available width obtained by the removal of the porters' rooms and closets. The additional area is to provide for, in the basement, a house-steward's room, and on the ground-floor, a house-dining room in lieu of the room adjacent, at the north-east angle of the old building, which will become the "writing-room;" whilst the upper floors will be appropriated for a smoking-room, and a billiard and smoking room, and their adjuncts. There are some minor alterations and additions; and the general internal repairs seem to comprise an unusual amount of that kind of work.

Besides the internal work, however, alterations beyond those already named are being made in the exterior, which will, no doubt, much improve the architectural character of a building, which, from whatever defects of design, was certainly not the most meritorious of its architect's productions, and was unworthy of its fine site. Interest, therefore, may be felt in the present works on many grounds, by architects; that is to say, whether regarding questions of construction and durability, or regarding the nature of progress in taste which may have taken place.

The third decade of our century was a very important one in London improvements, and as to the number of public buildings that were then going on. Nash, J. P. Gandy, Mr. Decimus Burton, who is conducting the present alterations, Sir John Soane, the Inwoods, Wilkins, Sir Robert then Mr. Smirke, Sir Jeffrey Wyatville, Mr. Lewis Vulliamy, and Mr. Edward Blore, were the architects employed, whose names present themselves to our recollection; and buildings completed or in progress in that time were the churches of St. Pancras; All Souls', Langham-place; and St. Luke's, Chelsea; and the chapel in North Audley-street; the terraces in the Regent's-park, and the Colosseum; Buckingham Palace and Windsor Castle; the Law Courts, Westminster; the Board of Trade; the Post Office, British Museum, King's College, and the London University; St. George's Hospital, the entrance to Hyde-park, the Hall at Christ's Hospital, the University Club-house, the New College of Physicians; the Corn Exchange, Mark-lane; Covent-garden Market, and Fishmongers' Hall; besides St. Katherine's Docks, the Thames Tunnel, and London-bridge; Hammersmith-bridge and the bridge over the Serpentine, and the improvements in St. James's-park; the squares in the locality now known as Belgravia, and the widening of the Strand. The architecture of the day of the Italian character was like that of Nash, bad, at least in details: the Anglo-Greek architecture, not without merit in the details, did not supply its deficiency of much of the Greek feeling by real and new *art*; and the Gothic architecture, though not really so bad as it has been the habit to consider it,—since the buildings contain original and commendable features of plan and grouping,—through its details gave the expression of little more than caricature of the style. Such errors will be likely constantly to recur where architects use old models, not as *lessons*, but solely with the effort to imitate them; and a like impression from the works of *our* day, haply may be derived when taste has made a still further advance and by our successors, if we also in the main, or practically, make a point of *imitating*, or of striving to get into an old stream rather than keeping in, whilst contributing to the volume and richness of the living and actual stream of our day.

The chief alterations in the exterior of the Club-house include the substitution of Portland cement for the original painted mastic, which certainly had always a very bad effect,—the substitution for the cornice, which was simply the entablature of the upper order of the portico in the main front, of a *cornicione* of better proportion to the height of the building, and including an enriched frieze, the design of which will be by Mr. Thomas,—also a work from the same hand for the tympanum of the pediment; a new balustrade to the building, with pedestals for vases; new balustrades to the windows, in Portland stone, in lieu of those in Bath stone, and of somewhat different proportions; and a balustraded enclosure to the area of the basement in place of the iron railing.

The mastic, composed, we believe, of Bath-stone sand, litharge, and oil, it may be well to observe, has, except in the arrises and upper mouldings of the cornice, stood exceedingly well. This was shown by the state in which even the arrises of the fluted columns were found. The building, we are told, had not been painted for a considerable time; and had this been done, decay would have been prevented on the only parts of the work in which it was observable—though in those, as all who latterly have passed the building must have noticed, it existed to great extent. The removal of the mastic, though the coating is scarcely more than one quarter of an inch in thickness, is obviously work of considerable labour. It is to be hoped that after the present heavy expenditure, the Portland cement may be found never to require colouring or painting. An inquiry into the question of cost of works of repara-

tion as regards original buildings of this date and magnitude, might afford some useful lessons. Our readers will not fail to recollect that the time of thirty years ago is often spoken of as one in which builders' work was executed in a style of which we have not any present experience. Are we to regard such extensive repairs as here are in progress, as necessary in buildings every thirty years?

The plan of the staircase-hall and rooms is commendable in many respects. Such ornament as there is, also is not without merit. But with all, the interior of the building, by its decorative character, at the present day, gives the impression a general coldness of effect.

The Athenæum Club-house, by Mr. Decimus Burton, completed about the year 1829, is stated in the "Companion to the Almanack" of the subsequent year, to have been modified as to the external design by some arrangement between the committees of the two buildings. This ideal harmony, so far as the opposite porticos of the buildings are concerned, will, we suppose, now be given up. It was never worth much; and the gain to the *plaçe* in variety, through difference in the buildings, itself may be worth more than the absolute uniformity. In all these little events in architectural history, an observer who is at same time a thinker, may find, we say, some lessons of value.

The works of the club-house are in the hands of Messrs. Wm. Cubitt and Co. under Mr. Burton's direction.

THE LATE MR. DWYER, ARCHITECT.

WE announce with regret the melancholy death of Mr. Jno. Dwyer, architect, which took place at the Lord Warden Hotel, Dover, on Tuesday evening, the 31st of August, in the 39th year of his age. Mr. Dwyer had been on a fortnight's tour in Belgium, and having suffered severely from sea-sickness while crossing the Channel, was, on landing, seized with pain in the region of the heart, and died within an hour after quitting the vessel. With artistic powers of a high order, he possessed an extensive knowledge of ornamental art and great fertility of invention. His works display a marked originality, and his favourite tyle (Italian Renaissance) he treated in a manner peculiarly his own. Mr. Dwyer was one of the successful competitors in the Government Offices competition of 1857, and a frequent contributor of papers (which were reported *verbatim* in our journal) at the meetings of the late "Decorative Art-Society." His last work was preparing some designs in water-colours for the decoration of Lanark (R.C.) Church. Those who knew him intimately speak highly of his strong sense of honour and of his energy under difficulties.

AGRICULTURAL DEVELOPMENT.

OUR recent observations on the necessity for improvements in agricultural buildings and accessories, have obtained the attention of some of our provincial contemporaries. The *Sheffield Independent* says,—"The *Builder*, in its review of 'The Book of Farm Implements and Machines,' expresses its

'Confident belief that an era of agricultural development, as wonderful as that which the present age has already witnessed in manufactures, is not only within the bounds of possibility, but on the eve of advent,—that the day is at hand when models of farm buildings now in use, and the agricultural implements of the past and present time, will be put aside as curiosities, beside the distaff and the spinning wheel; and when even the steam plough, as it yet exists, will be regarded as a rude and primitive instrument by comparison with others still to be invented.'

This is a bold prognostication, and possibly may be of the nature of an inspiration of that 'good time coming' of which poets have sung, and on which demagogues have expatiated. A few years ago, sewing machines would have been regarded as an absurd idea; and still more recently, the project of linking the old and new world together would have been scouted as fit only for the dreamers and magicians of the Arabian Nights' class. It is impossible to give a reason for denying the possibility of so augmenting the earth's fertility, and facilitating the gathering and securing its produce, and of improving the breed of domestic animals, as to produce as great a revolution in agriculture, as the steam-engine and spinning and weaving machinery have produced in manufactures. The original sentence which scattered weeds and other growths unsuited for human food, and which doomed man to painful and exhausting toil for his bread, cannot fairly be interpreted as precluding the sanguine hope of a new mode of manufacturing beef and bread, so as to lighten human toil and indefinitely augment man's vital resources. The donation of the earth to the human family, and the command to subdue it, rather lead to an opposite conclusion, and leave room for hope that, in process of time, three quarters of corn may be got in place of one, and new varieties of food may be discovered and cultivated, so as to supersede some now most esteemed. Centuries ago, wheat was scarcely known in Britain, and it is only modern history which records the cultivation of the potato, which now feeds largely its millions. Other plants and vegetable productions were once as little known as this now favourite root, and yet at the present day furnish work, and by consequence, maintenance, to vast numbers."

Abundant evidence can be adduced that the introduction of improved machinery and improved processes into agriculture means improvement in the condition of the labourer as much as the farmer. The *Bury Post* gives an example in the county of Essex:—"Messrs. Burgess and Key's manufacture of M'Cormick's improved reaping machine," says the writer, "has risen in three years from 30 to 200, and this year to 700 machines already sent out. It is patronised by princes and nobles in England, France, Tuscany, and other countries; and the Prince Consort invites the farmers of the Isle of Wight to witness its operation on his farm at Osborne. But in the vicinity of their manufactory at Brentwood, Messrs. Burgess and Key found considerable difficulty last year in getting the machine to work on the farm of one spirited agriculturist, on account of the hostility of the labourers. They were not, however, to be daunted, but declared their determination to persevere at all costs, and this year not the slightest difficulty has been experienced. But now let us see how has the introduction of machinery worked on this farm. At the harvest-home, last year, the farmer called up one of his men, and something like the following colloquy took place:—

Master: Tom, how long have I been on this farm?

Labourer: Well, master, somewhere about twenty years.

Master: And how long have you been with me?

Labourer: Well, soon after you came, master.

Master: And how many acres do I farm now?

Labourer: Why, just the same as you did then.

Master: And have I more machinery now?

Labourer: O yes, master, three times as much.

Master: And have I as many men at work?

Labourer: Yes, master, more men than you had then.

Master: And are your wages less than they were then?

Labourer: No, master, we make more money than we did then.

Master: And what's the reason of all this?

Labourer: Why, you grow a great deal more corn than you did then."

And this simple dialogue supplies the true solution of the matter. The more machinery, the more men employed; and the more men and machinery, the more produce.

Machinery must do the work: men must do the thinking and directing. To state the *desideratum* broadly, we must *turn agricultural labourers into professional gentlemen*. There are several intermediate stages to be gone through, and the desired object may be a long way off, but this is what we have to do nevertheless.

STREET ARCHITECTURE.

HIGH-STREET, WHITECHAPEL.

WHILE considerable advances are being made in architecture generally, our street architecture seems still for the most part in a very neglected and unsatisfactory state. In many cases no architect is employed, or he is prohibited by his employer from departing from the beaten track, on the grounds of (supposed) economy, or the requirements of his business, or from mere conservatism and disinclination to do anything unusual. The ordinary business front consists, on the ground floor, of one large void, which is filled with glass. Above this is a bressummer, which carries the first floor, and on which is built a plain brick wall, with holes in it for windows. The front wall is invariably finished with a level parapet, whatever may be the shape of the roof. A favourite form of roof is what is known as the V roof, specimens of which may be seen in abundance in leaving London by the Brighton or Blackwall railways. Where uniform rows of houses are built with these V roofs, the backs of the houses present a series of gables, half a gable belonging to one house and half to the next, while the fronts have the usual level parapets. The bressummers over the shop-fronts are usually concealed by an entablature of joinery, or lath and plaster work, stopped at the ends by gummy cement consoles, scarcely varying in pattern, and which are bought "ready-made," just as one would purchase a number of bricks. The fronts above the bressummer are faced with malms, with those weak, wretched, deceptive things called "gauged arches" over the windows, and the parapets are finished with a "neat" Portland or York coping, or a slight variation is, perhaps, made by the introduction of cement "dressings" to the windows and heavy cement cornices to the parapets; or the entire fronts are rendered with Portland cement, carefully "jointed" to imitate stone, with a great redundance of "dressings" round the windows, and heavy cornices to the parapets. Such are, or, at any rate, have been our usual stereotyped street fronts. In the majority of cases, architects are not responsible for these perpetrations, or if implicated, they are probably acting under the strict injunction of their employers, or with a similar feeling to that which leads us all to dress in black coats, and to wear chimney-pot hats—a feeling with which the monkey is usually supposed to be highly endowed.

It is somewhat refreshing, then, to see, here and there, as we now do, not merely in London, but the provinces, an attempt to avoid this dull monotony, and to throw off the senseless trammels with which we are surrounded; and we are led, therefore, to notice a building lately erected at No. 50, High-street, Whitechapel, as one of these evidences of movement.

In this design the object has been to obtain some degree of character and effect without materially increasing the cost, beyond that of the ordinary plain brick front, with a level parapet, previously alluded to. The frontage being narrow, and the building lofty, it naturally assumed a vertical character; and a gabled front seemed therefore more suitable than the ordinary level parapet, which would have given this house a very clumsy appearance, as it is much higher than the adjoining buildings. It was considered also that in this case, the cost of a simple ridge roof would be less than that of a V, or of a hipped roof.

The front is formed with the ordinary yellow bricks, with arches of red bricks,—the object being to avoid, as far as possible, the variegated or "Tonbridge-ware" effect (as Sir Charles Barry terms it), now somewhat in favour. Yellow bricks were used as the predominating materials, while the red bricks have been sparingly used, to afford a slight and agreeable relief. The large arch over the first-floor window is not a mere decorative feature, but is carried through the thickness of the wall, so as to be really capable of carrying the fronts. There is also in the basement a corresponding inverted arch to spread the weight of the front over the foundations. The windows have 9-inch external reveals on the grounds of strength and effect. In order to obtain segmental arches externally, and yet to avoid the expense of segmental heads to the sashes and frames of the upper windows, the outer half-brick rims of the arches are segmental, while the soffits of the inner rims next the frames are level. A projecting shop-front was necessary, from the fact that the upper portion of the house could not be brought forward, or it would have projected beyond the "general line" of the neighbouring fronts. The roof of the shop-front is covered with plain-tiles, each alternate course of which is laid diagonally. The fascia of the shop-front is formed of two thicknesses of glass, the outer being of clear plate-glass, on the inside of which the inscription is written, and the inner of flashed ruby glass, which throws up the gilt letters, and serves to protect the inscription, while it admits light into the shop at day-time, and at night, when the shop is lighted up with gas, the fascia is thus illuminated, so that the name can be read from the outside. The use of external plaster decorations has been avoided.

The architect is Mr. Chas. B. Arding; and the builders are Messrs. Browne and Robinson.

SERMONS IN STONE.—Sir: Even the entrance to a workhouse may be made ornamental and instructive. The pediment over the brick entrance to the Strand Union Workhouse, in Cleveland-street, Fitzroy-square, has been decorated with an ideal figure of an old man holding and pointing to a piece of drapery, with the motto, "Avoid idleness and intemperance," cut in projecting letters, of a regular width, and it is to be hoped that this advice will be taken by all those who pass it.

P. S.

THE THAMES PLAGUE.

Sir James Murray, of Dublin, writes to us as follows:—"Observing that you devote much time and attention to sanitary measures, may I venture to solicit space for the enclosed suggestions? They are founded upon long experience, and can be tried in any section of a town at small cost."

"*Pestis et ira Deum stygiis sese extulunt undis.*"

In accordance with the able paper on smoke, sewage, &c. in the Transactions of the Highland Society for July, 1858, it is quite right to bank the Thames and all tidal rivers: no exuviæ should be exposed, as silt and mud, to the sun and air. They ought to be constantly covered by a deep *water-valve*.

But the veins that disgorge their vitiated currents into the central heart must have their odious streams edulcorated; otherwise foul drains, as feeders, will always keep the great alluvial receptacle foul itself.

Defined areas of cities should be insulated, and their sewage treated *separately*, so that deluges from one district shall not interfere with another. Street grates and gullies, &c. to be valved, to direct storm-floods into particular channels, and to render other drains or tunnels more adapted for the new processes of suction of foul airs from stagnant receptacles below, and of smoke nuisances from above.

These new processes consist in *extracting* vapours, gases, and miasms by *traction*, since *driving them by force* has hitherto failed.

About two years since letters patent were obtained "for abating the smells, and increasing the fertilizing usefulness of sewage and precipitated gases, also for chemical and improved mechanical means of transmitting them to such distances or levels as may be required."

During the first cholera in 1832,* as a member of the *Central Board of Health*, I made numerous experiments on the agency of a partial vacuum for medical and sanitary purposes.

By these trials I found—

1st. That a large air-tight tank, with tubes, answered several sanitary uses. Among others, that when its air was exhausted by a pump, or by *traction* into *lighted lamps or funnels*, the foul gases of sick rooms, or hospitals, and smoke itself, could be speedily abstracted by suction, and their places supplied by an influx of fresh air.†

2nd. I found this plan far superior to *ordinary ventilation*, becauses that mixes good and bad air together, and both escape, or are blown about alike, out of chambers and barracks; whereas first employing traction of foul vapours up some *rarefied conduit*, allows, then, the introduction of an entirely pure and unmixed atmosphere into the vacated spaces.

3rd. That a self-injected jet of red-hot hydrochloric acid gas into the vat or cistern produces many valuable effects in disinfecting vapours, decomposing miasms, *preventing smells from ascending up lamps or spouts*, promoting evaporation, drying basements, and aiding to form a *partial vacuum* in the cisterns, by condensing the acid vapours, with the fumes and steam commingling in transit along the pipes and vessels, or passing over floods of fœcal matters.

4th. That such rarefaction can be established, at little or no expense, to draw miles of drain-exhalations to the condensing reservoirs, even without the aid of pistons.

5th. That pumps and pistons, like the atmospheric engines of railways, are not, however, to be objected to, because their great shafts and fires conduce to accomplish many subsidiary ends for the new processes of *Traction*, for *deodorizing vapours* and ventilating drains. To render the outlines of these processes more plain, reference may be had to the proceedings of the Surgical Society of Ireland, as reported in the *Dublin Medical Press*, February, 1858.

As in respiration we require to *exhale* twenty inches of breath before the lungs can inhale twenty inches of pure atmosphere, let us imitate Nature, and draw out the bad vapours *first*, from crowded houses or institutions, when, instantly, an equal volume of fresh air will flow into the space so vacated.

Ventilation, by forcing or blowing, does not separate bad air from good, but commingles and transfuses them together: propulsion, by bellows and mechanical contrivances, has been tried long enough, but smoke, vapours, breath, and fixed air will not be *pushed away* to leave a void space for a purer atmosphere: they yield, however, to the power of *traction*, by which we can withdraw bad fumes at will, and make room for good air instead.

These few outlines may direct some more attention to this comparison, so far as relates to pulmonary action, like the expiration of noxious airs, smoke, and miasms, succeeded by the inspiration of a salutary atmosphere.

The other operations, bearing some analogy to those of the heart, relate to the traction or expulsion of drainage, when it passes purified into vast tanks or ventricles, where a lift of some height raises it up pipes, furnished with valves, like the aorta. When these principles should be applied and modified on a large scale for cities, barracks, &c. double tunnels and tanks would be required to clear out soot, silt, and guano, from the one vat, whilst another is in operation.

* See "London Medical and Surgical Journal," 1832.

† See the author's paper on the Air-pump, Royal Dublin Society, 1838, and notes on Cholera. Longman and Co. 1848.

CONSTRUCTION OF FARM-GATES.

In the *Builder* of the 21st of August, the leading article treats of the construction and hanging of gates, and states that hitherto very little attention has been paid to principle in the construction of field-gates,—that ninety-nine out of a hundred are glaringly defective as pieces of carpentry, and not unfrequently constructive defects appear in gates of much greater pretensions; and then is pointed out what the essentials of a field-gate ought to be. Allow me to mention a sheet of drawings which came into my possession some time ago, consisting of plans, elevations, sections, details, &c. made by Mr. A. Paterson, clerk of works, identical almost in every respect with what is set forth in the *Builder*, and which drawings were laid before the Society of Arts, at their rooms in the Adelphi, and examined by the committee of mechanics on the 26th of March, 1846.

These designs show that a gate should be constructed upon a similar principle to what a self-supporting crane is constructed; that the point of suspension should be at, or below, the surface of the ground; and that a diagonal bar springing from the bottom part of the heel-post to its opposite angle should be the principal part of the framing of the gate; that the top and bottom rails and head-post are secondary, and that the filling in is merely a matter of fancy or taste. A hinge of a different construction to any I have yet seen is here shown, for the purpose of preventing the head of the gate from drooping down, which is the case with ninety-nine out of a hundred of the usual construction, after being hung a short time.

A design for a stop bar, or gate, such as is used in several parts of Pimlico, and elsewhere, is also shown, where the gate is constructed without a gate-post, and so as to make a complete revolution on its own axis, formed by the heel-post being continued down several feet below the surface of the ground, and let into an iron socket fixed into a rough piece of wood, such as the butt end or root of a tree sawn down the middle, and the ironwork inserted in the same;—the pieces of wood bolted together again, and fixed in the ground, which must be well rammed down round the same to make it perfectly firm and secure. This stop-bar or gate would be quite portable, as it might be taken out of the socket at any time required, and a wooden plug, made to fit the socket when the gate was taken out, could be inserted, the top of the plug being level with the surface of the ground, to prevent accident or injury. This stop-bar or gate might be most usefully employed in many positions where at present there is none that I have yet seen so fit for the purpose.

A design for a large iron gate is also shown, where the heel-post is continued down some feet below the surface of the ground, and let into a socket fixed into a strong piece of stone. A spur, with a small roller on the bottom end of the same, is continued down from the heel-post, at the surface of the ground, and traverses on a piece of iron plate, let into the same stone and level with the socket. This spur is the medium of self-support to the gate instead of a roller on the surface of the ground, which is frequently employed. A wall of brick or stone work encloses the space where the spur traverses, covered over with a stone covering, so as to be taken up at any time with little inconvenience. The construction and hanging of this gate would give much less vibration to the work adjoining the gate than what usually is the case when the gate is hung principally by the top hinge, and where a great strain is exerted sometimes against weak piers, causing great damage to adjoining work.

A design for a farm-yard sliding gate is also shown. Two rails are fixed along the face of the wall or fence adjoining the gateway, which sustain the gate when either open or shut. No rail or groove is required to cross the gateway to keep the gate in its proper position. This gate would be very useful in many cases, and particularly where the ground at the gateway happened to be much out of level.

All these gates are constructed with a diagonal bar, being the principal feature of construction.

R. Jones.

THE NINE HOURS MOVEMENT.

Sir,—Allow me, in justice, one small nook in your journal, in reply to "One who knows a Thing or two." In the first place, when he speaks of wages thirty-five years ago being only "24s. to 27s. per week for best men," allow me to ask what men he means? Surely he does not mean carpenters and joiners: if he does, he knows nothing about the wages at that time; for it is in the recollection of many men who worked in London at that date, that men were in receipt of 5s. 6d. per day. Also, about that time, if "One who knows a Thing or two" will tax his memory, resolutions were passed and carried into effect by the carpenters and joiners, at the "Yorkshire Stingo," New Road, Marylebone, on Friday, 3rd day of June, 1820, or 1823 (I am not quite certain which), that 5s. 6d. per day should be acknowledged as the standard rate of wages; and I have no doubt in my own mind that, when he speaks of 21s. and 22s. per week, he was in receipt of that sum for the first two years after his apprenticeship, and so "measures others' corn by his own bushel."

It is all very well for one that has nothing else to do to set on the goose's quill, to fire away and rake up old musty bills to tell us that certain articles were of such and such a price at such a date; but then we might go back to the time of Doomsday, and say that, because such and such was the price at that time, you shall be guided by that and no other; but allow me to say that, in this age of progression, prices thirty-five years ago have become obsolete, and are no standard for the present generation. As for clothes, have not the last thirty-five years caused a complete revolution in prices by the aid of machinery? and as machinery has supplanted the labour that is at present in the market, the carpenters and joiners have only asked for a reduction of the hours of labour in the spirit of humanity, so that, instead of many being out of employment, it might be equalized, and our fellow man obtain that which, by his nature, is to fulfil the command,—"Man shall eat his bread by the sweat of his brow." And thirty-five years ago, population had not increased to such an extent, and those could better afford to pay a higher price for provisions at that time, on account of insuring a more constant demand for their labour; and instead of, as at present, two men looking for one employer, it was *vice versâ*.

Who, I would ask, first started the "nine-hour movement?" Have not employers introduced it themselves in the winter? and we say, if you take advantage of the dark days, give us the benefit of the light ones for our own improvement. And, again, who has taken up the question of the "Saturday half-holiday?" Not the working men, but men of philanthropic principles, who feel for those that toil from morning till night for a bare subsistence, and would give them some little relaxation for moral and social improvement. Such misanthropists as "One who knows a Thing or two," would keep us toiling on, and asks himself the question, "What do they want improvement for? Such did for their forefathers, what need they more?" What are your Mechanics' Institutions, Schools of Art, &c. raised for? Why, their very names will answer the question; and if the British public have been so generous as to build up these institutions for our instruction, they are also willing to extend their generosity by granting us the boon of one hour to improve and cultivate our minds, and the employer will lose none of his profits if the public pay for it; so that if the employer is paid, his profits will warrant the reduction of the hours, or the advance of wages, whichever you please to call it.

A Poor Carpenter.

Sir,—As you were kind enough to insert an article on the "Nine Hours Movement" in your last, with equal fairness I hope you will give insertion to this note. Your correspondent appears to be in error about the wages given to the best men at the time stated. All that I have consulted on the matter give it a blank contradiction: a more correct statement would have been, the best men where he was apprenticed. With regard to the price of necessaries, the writer of the article

alluded to has been kind enough to tell us something which unfortunately we know too well to be true, and few, indeed, are they who require reminding of it. There are one or two points, however, upon which the author has not touched, and which, perhaps, may prove interesting.

That is, how much of the several articles, enumerated in his letter, the head of the family to which he belonged could obtain (of course, supposing that party to be a mechanic, and getting 27s. per week); whether intellectual culture was cared for among the working-classes in those days, and how much could be spared for it; or whether they had to depend upon some charity to supply the deficiency; and, lastly, whether the artisans of this great country, who have done their part to make England what it is, were at that time getting their fair share of this world's comforts, and that is the reason that wages at the present time ought to be reduced. Thanks to a cheap press, and the spread of intelligence among the labouring-classes, we are now alive to the importance of instructing ourselves, and of giving our children some degree of schooling, to enable them to drag through this existence with some degree of comfort, which is a task of no easy accomplishment with the mechanic at the present rate of wages.

Allow me, sir, just to add, that I am no partisan of the nine hours' movement, which is started for the very laudable purpose of giving employment to the unemployed. It appears to me if the principle were carried out in all branches of labour, we should find ourselves, ultimately, in a worse position than at present. The more effectual mode would be, the establishment of an Emigration Fund among the working-classes, to assist in transferring those who are qualified, to where the chance of employment is greater.

I do hope, sir, on the first opportunity, time and space permitting, that you will give the artisans of England a simple and candid article on this question, for which I am sure they will feel grateful.*

A LONDON JOINER.

THE PROPOSED MUSEUM AT ATHENS.

ALTHOUGH we have already printed the terms of the proposed competition for a design for a museum at Athens (p. 558, *ante*), we think it right to give an official translation of the whole programme. Further, we are authorised to state that the Greek Legation at London is instructed to receive and transmit to the Hellenic Government all communications respecting the museum.

OTHO, BY THE GRACE OF GOD, KING OF GREECE:—

Considering the liberal donation of Mr. D. Bernardaki for the erection of a museum at Athens; desiring that the conservation of the remains of antiquity existing in Greece be provided for in the most proper way and the most worthy of those treasures:—

On the proposition of our Minister for the Department of Worships and Public Instruction, we have ordered as follows:—

Art. 1. A museum shall be erected at Athens to contain the antiquities which have been treasured, up to this date, and those which may be successively discovered. The situation of this museum, the execution of which must be worthy of the masterpieces it will contain, shall be determined subsequently.

Art. 2. The architects of all nations, who should desire to submit to the Hellenic Government projects for this monument, shall be invited to do so either directly or through the Legations and the Consulates of Greece, before the expiration of a year from this day. The projects must be accompanied by sections, front-views, &c. The architect whose plans are adopted shall be intrusted by right, if he desire it, with the execution of the edifice.

The designs must be accompanied by estimates.

Art. 3. The museum shall comprise general divisions by periods, and subdivisions by objects for the scientific disposition of the antiquities. In the division by periods a place shall be reserved for casts of the antiquities conserved in foreign museums as well as for designs and models of the monuments of architecture belonging to the same periods.

Art. 4. The structure must include compartments for an archæological library, for the offices of the administration of the museum, and storerooms for objects previous to their scientific disposition.

Our Minister for the Department of Worships and Public Instruction is intrusted with the publication and execution of this ordinance accompanied by the necessary instructions.

In the name of the King,

The Queen,

(Signed) AMELIA,

(Counter-signed) CH. CHRISTOPOULOS.

INSTRUCTIONS FOR THE ARCHITECTS:—

Proud to contain in her soil the remains of the finest of arts, and of the written monuments of the most brilliant of histories, Greece has felt for those precious remains, from the first days of her regeneration, the most lively solicitude. She has searched for them in her soil: she has collected them, and preserved them from destruction. Laboriously enriched, this collection is already so extensive, that the necessity for the construction of a museum to contain them has been felt long since most pressingly. The ever-ready liberality of several Hellenes, and especially of Mr. D. Bernardaki, so distinguished for his generous patriotism, having tendered assistance, the subjoined ordinance, relative to the construction of a museum at Athens, has been issued by his majesty.

An edifice intended to shelter the masterpieces of the great artists of antiquity must be, as an artistic monument, worthy of the objects it will contain; nevertheless, considering the actual circumstances of Greece, the beauty of the edifice must depend less on the richness of the execution than on the happy disposition of the plan and the harmony of the proportions.

We invite, therefore, conformably to the terms of the ordinance, the architects of all nations, who might think as we do, that the interests of the fine arts require the erection of a museum at Athens—that town which has been the cradle of art,—to send, during the term fixed by the ordinance, their projects to his majesty's government.

The following data are nothing more than stakes intended to guide the artists in the way they have to follow.

According to the terms of art. 3 of the ordinance, the museum should be divided by periods and subdivided by objects.

Thus, the first distribution shall comprise rooms for monuments of all kinds, of each of the following periods:—

1. Heroic times and Archaïc or Eginetic period.

Flourishing Period of the Arts.

2. Period of Phidias.
3. Period of Praxiteles.

Decline.

4. Macedonian period.
5. Roman period.
6. Byzantine period.
7. Lastly, a division should be reserved for foreign objects of art which might exist in Greece.

The disposition by objects might be effected in the following manner:—

Statues, busts, and architectural fragments might be placed in the centre of each room; bassi-relievi and inscriptions fitted in the walls.

Cabinets adjoining the two sides of each room might contain the other objects belonging to the same period, such as vases, coins, engraved stones, &c.

The plan might perhaps require that the central room should receive light from the roof, and the lateral ones through side-windows.

According to the fundamental enacting of the royal ordinance, the disposition of models and casts is equally subject to the distribution by periods. Nevertheless, as it should be desirable that the series of rooms intended for the originals should not be interrupted by the interposition of the models and casts of the same period, it might, perhaps, be deemed advisable that the apartments which are to contain the ancient originals should not be on the same floor as those which are to contain the casts and models; but care should be taken that a communication should exist between the rooms containing the originals and those containing casts and models of the same period.

As to the dimensions which are to be given to each of the different parts of the edifice, it appears to us useful to add the following information:—

1. The collection of antiquities anterior to the eightieth Olympiad existing in Greece, or at least discovered up to this time, is very limited, although it is, after the Eginetic collection of Munich, the most considerable of all those of the other museums of Europe.

2. The school of Phidias, with the exception of the friezes of the Parthenon, has afforded up to this time but few fragments of sculpture. The inscriptions, coins, and vases of this period are more numerous.

3. The collection of the succeeding epochs up to the Roman period, 94-158 Olympiad, existing in Greece, and especially of the Macedonian times, is very considerable, and the number of bassi-relievi, inscriptions, and objects of art of minor dimension, increases every day.

4. The number of objects of the Roman period surpasses that of all the other collections. Few museums of Europe possess as many as Greece, and a much greater number is, doubtless, still hidden in the ground.

5. The remains of the Byzantine period deserving to be gathered and conserved are comparatively few.

6. In fine, some few fragments of foreign arts in the Egyptian and Asiatic style are also to be met with in Greece.

Athens, June 30 (*July* 12), 1858.

The Minister Secretary of State for the Department of Worships and Public Instruction,

(Signed) CH. CHRISTOPOULOS.

DOINGS IN BELFAST.

It is proposed to erect a public lecture-hall, library, reading-room, &c. by the Belfast Roman Catholic Institute Association.

A new Evangelical union meeting-house has been built at Wellington-place. The exterior is of red brick, of ornamental character, and somewhat Byzantine in style. Mr. Boyd, we believe, is the architect.

In the neighbourhood of the Botanic Gardens, buildings of a domestic class appear to be on the increase, and are generally of a superior description, compared with other provincial towns. A large block, apparently for a similar purpose, but of much more expensive nature, is in course of construction near the east side of Donegal-square, and at the opposite corner a large building in grey brick, and with two important fronts, has been recently reared, probably for commercial purposes.

A terrace, in the Elizabethan and Tudor styles, with centre and wings terminated by high-pitched gables; large projecting oriels on first floor, and four stories high, with basement in addition, is about being built at Elmwood, nearly opposite the Queen's College. Materials, red brick and Dungannon stone. Mr. Thos. Jackson, architect; who has also designed a new bank for Derry.

The Ulster Bank-house (previously described in the *Builder*) is being proceeded with, and is about to be raised to level of principal floor. Messrs. Fulton are the contractors.

Several commercial houses are being newly fronted, or otherwise decorated, but the most important work of that class in this or any other provincial town in Ireland, is the establishment of Messrs. Lindsay, in Donegal-place. The exterior is richly ornamented in the Italian style, and has two wings, with balustraded parapet, carried up higher than the centre, and with polished Aberdeen granite columns, which have a striking effect. Interiorly the decorations are elaborate; and a segmental roof, with thorough glass lantern and timbers, partially exposed and painted white, lights the whole. Galleries are also introduced, and have metal railings and enriched soffits.

It would be well if there were more architectural improvements in that leading thoroughfare, Castle-place, wherein some of the shop-fronts and houses are of the paltriest character. Several of the new ranges of houses and shops are not to be surpassed by those of any other town in Ireland.

A new school-house is to be erected immediately at Mary-street, by the Presbyterian congregation of Belfast. There will be two schools, one for boys, the other for girls, each 47 feet by 23 feet, and 16 feet 6 inches high, separated by a portable partition so as to form one apartment for lectures, &c. The schools will be one story, and lighted from a continuous range of glass along the top of the roof; but in front will be a two-story building, containing on first floor a library, 23 feet by 17 feet, and 13 feet high. Due provision will be made for ventilation, &c. The front elevation will consist of a rusticated basement, with central doorway, and a small semicircular-headed window at each side, with sills level with a moulded pedestal. Above are four Roman Doric columns, with a large and two smaller windows, in intercolumns, and surmounted by a triglyphed entablature, above which is a balustraded parapet, with ornamental vases central over each column. Mr. J. Boyd is the architect. Material of front, freestone from Scrabo. There will be two entrances, one in front, the other in the rear.

On the whole Belfast is improving, and the best sign is, that all connected with the building profession are busy.

* Some observations on the Workmen's Emigration Society will be found at p. 573, *ante*.

CHURCH-BUILDING NEWS.

Poplar.—The foundation-stone of a new Baptist chapel and Sunday school was laid on the 24th ult. The building is to be Gothic, with open-timbered hammer-beam roof, from the designs of Messrs. Morris and Son, architects. Mr. Salt is the builder.

Braintree.—The parish church of St. Mary, Panfield, near Braintree, was re-opened on the 19th ult. The nave has been restored, the roof re-tiled and boarded outside the rafters, the outer walls stripped of their plaster covering, and the flint-work pointed with blue mortar, the stone-work repaired and renovated, the belfry fresh boarded and a band of pierced quatrefoils inserted, and the spire carried to a point. Internally the walls have been re-plastered, the oak beams of the roof oiled, open stained deal seats put up in lieu of the old pews, and various other improvements carried out. The west window over the font is filled with stained glass by Mr. Lavers, the subject being "Christ blessing little children," and "Timothy receiving instruction in the Scriptures from Eunice and Lois." A south window is also filled with stained glass. The chancel has been almost rebuilt, a north aisle and vestry added, a perpendicular window of five lights inserted in the east wall, and filled with stained glass by Lavers. The subjects in the lower lights are the Birth, Baptism, Crucifixion, Burial, and Ascension of our Lord. In the upper lights are represented the instruments of our Saviour's Passion; the emblems of the four Evangelists; and "The Majesty," holding in the left hand an orb, surmounted by a cross, the right hand pointing upwards. The south chancel windows are filled with coloured quarries by Powell. The aisle is open to the chancel by an arch supported by shafts of serpentine rose-coloured marble. Under the east window is a sculptured reredos, inlaid with different coloured marbles. The whole floor is laid with encaustic tiles. A low screen divides the chancel from the nave.

Over.—The restoration of the tower of the church here is still proceeding, and by means of braces the fissures have been made sound. The roof of the chancel, the *Cambridge Chronicle* remarks, is neither symmetrical with the east window nor high enough to correspond with the nave. The same mistake was made in the restoration of Chesterton Church by Trinity College.

Holt.—Since the early part of June last, the ancient Norman church of Holt has been closed for restoration and repair. The works are now approaching completion. The entire face of the walls in the interior has been chipped: a new open roof of woodwork has been erected over the chancel, the ceiling of the nave removed, and the old wood restored and thrown open. Some months ago the western window, a specimen of the Perpendicular period, had been restored to the church by the removal of the organ gallery from underneath the western arch. Plain open seats of oak are being erected in the nave, and the ancient door on the north side, opposite the principal entrance, after being closed time out of mind, will have its timbers again swinging on their hinges. The old encaustic tiles which for some centuries adorned the floor of the south chapel (belonging to Holt Castle), have been relaid. Two stained-glass windows have been inserted on each side of the chancel. The church is to be warmed with hot water, the apparatus for which has been laid down by Messrs. Jones, Rowe, and Perrins, of Worcester. Mr. H. Rowe, county surveyor, has superintended the roofing, seating, &c. Mr. Tolley, of Ladywood, is the carpenter, and Mr. Snow, of Ombersley, the mason. The expense of the restoration will be borne by Lord Ward, except the chancel-work, which will be defrayed by the incumbent, Mr. Sale, whose wife, it appears, has exercised her artistic skill in the restorations.

Tidenham.—The parish church of Tidenham has been re-opened for divine service. It has been restored under the superintendence of Mr. John Norton; and the contractors, Messrs. Wall and Hook, of Eastcombe, near Stroud, have carried out the design of the architect. The sittings are low, uniform, and open, those in the chancel being (with the pulpit and reading desks) of carved oak. An east (memorial) window of coloured glass, executed by Mr. O'Connor, of London, has been erected in the chancel by private subscription.

Taunton.—The foundation-stone of St. George's new Catholic church, at Taunton, was laid on Thursday week. The site selected for the new edifice is at the top of Billet-street. The church, presbytery, &c. will cost about 6,000*l.* exclusive of the price of the land, the internal fittings, and carving. The builder is Mr. John Spiller, of Taunton, and the architect, Mr. B. Bucknall, of Rodborough, near Stroud. The style of architecture will be the Decorative. The frontage, including the sacristy, is about 72 feet. The main entrance, or west door, is 11 feet 6 inches in height, and 7 feet in width. On each side are stained windows belonging to the aisles. Immediately over the door is the front or principal window, measuring 21 feet in height. The tower, from base to parapet, is 89 feet; and the spire, including the vane, 105 feet. Attached to the church is the presbytery. The nave is 10 feet by 22 feet; the aisles, 80 feet by 9 feet; the chancel, 26 feet by 18 feet; the two chapels at the end of the aisles and adjoining the chancel, 16 feet by 12 feet; and the two sacristies, one 15 feet by 10 feet, and the other 12 feet by 6 feet. The roof will be open, and built of stained deal: the aisles will be supported by stone principals. Under the foundation there will be formed a bed of concrete, which will have to be thrown from a height of 12 feet. The exterior of the church walls are to be built of Monkton stone, picked and hammer-dressed. The interior is to be built of burnt bricks, 9 inches thick. The spire from the parapet is to be built of ashlar (of Bath Coome-down ground stone), 10 inches thick at the base, and gradually lessening to 6 inches at the top, to be crammed with galvanized iron cramps, run with lead. The roof is to be slated with Bangor slates, and the walls plastered.

Pantasaph.—The foundation-stone of a Franciscan monastery has been laid at Pantasaph, in North Wales. Viscount Feilding has recently given about fourteen acres of land to the Roman Catholic Church at Pantasaph, on which is to be erected the monastery, a large school, &c.; the remainder of the land being devoted to the formation of monastic grounds, &c. Subscriptions to a considerable amount having been contributed towards the erection of a monastery, plans were drawn, foundations dug, and the first stone laid, dedication being to Saint Dewi or David.

Frodsham.—For some time past the residents in the district of Five Crosses have felt an inconvenience from the fact that no place of worship was located nearer than Frodsham; and Mr. Thomas Hazlehurst, of Runcorn, determined that a Wesleyan chapel should be erected. This same gentleman had been the chief contributor to the erection of five other chapels,—at Helsby, Farnworth, Widnes Dock, Runcorn, and Weston; and he generously came forward to defray the entire cost of erecting a new chapel on a spot of ground close by Five Crosses, in the township of Overton, in the Eddisbury division, and about three-quarters of a mile from Frodsham. The foundation-stone of the chapel has just been laid. The plans, which include a schoolroom, have been prepared by Mr. William Winn, architect, Penketh, near Warrington; and Mr. Thomas Davies, Frodsham, is the builder. The chapel, which is to be of red brick with Roman mouldings, will have accommodation for 150 hearers, and the school will hold an equal number of children.

Ashby-de-la-Zouch.—The foundation-stone of a chapel to be attached to the school at Repton was laid on August 26, by Earl Howe. The intended building will stand on a basement, raising the floor several feet from the ground. The style adopted is Gothic of the fifteenth century. The building consists of nave and transepts; one of which will be appropriated to the choir. The entrance will be through a porch, with a deeply-recessed doorway in the north transept. The walls inside and outside will be of stone, the inner surface to be chiselled. The roof will be constructed with eight pairs of trussed hammer-beam principals, the ends of the beams being carved, and the whole of the ceiling lined with boarding. At the east end will be a five-light window, with tracery in the head, and on the sides are coupled two-light windows. An oak turret for a bell will rise from the centre of the roof. Mr. I. H. Stevens, of Derby, is the architect. Messrs. J. and O. Lilly, of Measham, and Elliott, of Ashby, are the builders, whose contract for the carcase of the building is 1,734*l.* The chapel is estimated to cost rather more than 2,000*l.*

Heslington.—During the past year a new church has been in the course of erection at Heslington, near York, from the designs of Messrs. J. B. and Wm. Atkinson, architects, the style adopted being the Flowing Decorated. The plan of the church, as described in the *York Herald*, is arranged so as to seat six adults on either side of a spacious aisle, approached from a south porch, forming the principal entrance, which admits the congregation at once into the body of the building,—a parallelogram, increasing longitudinally, 65 feet by 25 feet in width. The chancel extends eastwards 26 feet in length, and 16 feet in width, and is raised one step from the nave under an arch. The western tower is also separated from the church by a pointed arch, and rises 11 feet square in its clear dimensions between the walls. In addition to these is placed, on the north side of the chancel, a vestry, which completes the area of the structure. The stone employed in the building of the walls is from the West Riding, that of the mouldings of arches, window-jambs, and traced heads being the Ancaster stone of Lincolnshire. The tower rises some 60 feet to the cornice, whence springs a spire to a height of 110 feet from the ground topped by a vane. The pews are of oak, the bench ends being carried by curved outlines into carved finials. The chancel is provided with a costlier description of stalls. Accommodation is thus rendered available for 220 adults and 70 children. The roof is an open one of wrought, chamfered, and stained timbers. The church is lighted on the north and south sides by means of double light windows of varied design, in the formation of trefoiled tracery. The east wall has a window of five openings, filled with stained glass by Messrs. Hodgson, of York. The west wall of the tower is provided with a three-light window. The total cost has been upwards of 3,000*l.* the whole of which has been contributed by Mrs. Lloyd, of Stockton Hall; and the works have been carried out as follows;—The masonry, by Mr. Weatherley; carpentry and joinery, by Messrs. W. Bellerby and Son; plumbing and glazing, by Messrs. W. and T. Hodgson: slating, by Mr. Barnabas Baynes; painting, by Mr. Henry Perfect; plastering by Mr. G. Jennings; the ornamental ironwork, by Mr. John Fryer: and the building has been heated by Mr. Wm. Walker. The font was supplied by Mr. Bradley, sculptor, York, and the wood carving was executed by Mr. Wolstenholme, also of this city. The church was opened and consecrated on Thursday in last week.

Norton.—The church here has been restored. The main feature of the restoration is the insertion of a Græco-Italian stained glass eastern window, over the communion-table. This window was designed by Mr. Teale, jun. of Malton, and has been executed in colours by Baillie, of London. It contains three lights, the circular-headed centre one being the largest. It represents the apse of a Corinthian temple, in which stands Christ, surmounted by a dove, both having glories. Christ is represented holding a globe upon which is a cross. This light was previously intended to be filled by a figure of St. John. The two side lights are rectangular. The north contains a full-length figure of St. Paul, with the Bible, naked sword, and a glory. The south light has a full-length figure of St. Peter carrying the keys, and having also a glory. The window head, or arch, is filled (in five compartments) with emblematic representations of St. Matthew, St. Mark, Christ, St. Luke, and St. John. The masonry of the window has been executed by Mr. John Teale, of Malton. The next item in the restoration is the erection of fourteen new pews in the west part of the nave, for the use of the poorer inhabitants. The doors have also been laid with boards. These new pews have been grained, and, together with the rest of the wood-work, varnished, by Mr. Wilson. The church has also been renovated and cleaned throughout. The wood-work has been executed by Mr. W. Wilson, of Norton, and the wire screen, &c. for the window, by Mr. North, of Malton. The estimated expenditure is about 200*l.*

Newcastle-on-Tyne.—The old building known as St. James's Chapel in Blackett-street, Newcastle-on-Tyne, is now in course of being taken down, and a new and more ecclesiastical congregational church is about to be erected on its site. The works have been let to Messrs. Scott and Reid and Messrs. Smith and Bell. Messrs. Oliver and Lamb are the architects.

Edinburgh.—A new church for the united Presbyterians is being erected on the south side of Lauriston-place, at the top of Lauriston-street. The new building will be a Gothic edifice, and is to contain sittings for about 1,200 persons. The front or gable end, facing the street, will rise to a height of about 75 feet, and differs considerably both in general design and in details from any other specimen of modern Gothic church architecture in Edinburgh.

Glasgow.—Laurieston parish church, at Glasgow, has been undergoing some restorations. The principal alteration is the removal of the triple window behind the pulpit, and the substitution of a large painted window from the manufactory of Mr. John Cairney, of Glasgow. It represents the transfiguration of our Saviour on Mount Tabor. The design represents Christ as the central figure

in the group; with, on either side of him, Moses and Elias, and the three disciples, Peter, James, and John, lying on the foreground, shading their faces with their hands from the glory which appeared to them. The picture is surrounded by a border. The expense of the improvements amounts to between 200*l.* and 300*l.*

BUILDINGS IN IRELAND.

Reformatory of St. Vincent de Paul, Golden-Bridge, Dublin.—A Reformatory for female convicts has been established in the above locality, under the management of the Sisters of Mercy. A plot of ground, about six acres in extent, containing a small suburban residence, has been procured, on which it is proposed to erect the necessary buildings. Laundries on an extensive scale, and at a cost of 3,600*l.* have just been completed. The building is 220 feet in length, and 45 feet in extreme breadth, with exposed timber roof, and louvre ventilators. It contains store-room, packing-room, ironing and mangling rooms, each 40 feet by 20 feet; also laundry of the same size; drying chamber, 30 feet by 20 feet; boiler-room, coal-store, steaming and fumigating rooms, kitchen, scullery, bakehouse, flour and bread store, with passages, &c. &c. The boiler-room is entirely covered by a large cast-iron tank, which is supplied from the neighbouring canal. A large cast-iron cistern, heated by steam, supplies hot water to the different departments: the drying-chamber is furnished with sliding horses, which enter an air-tight closet, heated by a system of horizontal and upright steam-pipes. The steaming-room is furnished with large rectangular wooden boxes (with close covers), into which the clothes are put, and acted on by steam, before being washed: these boxes, when closed, preserve the water at the boiling point for two days. The want of dormitory accommodation limits the number of inmates to 75, but the laundries are intended for 200 convicts. It is intended to erect large dormitories, together with refectory work-room, chapel, &c. for all of which designs are prepared. We understand that during three years no case of relapse has occurred: on the contrary, the inmates generally exhibit the most lively grief when the period arrives at which they must leave the establishment. In most cases the Sisters procure situations for them; and in many instances, where emigration to Australia can be procured, a branch of the community, settled in that country, takes charge of the emigrants until suitable employment can be obtained.

St. Mary's College, Mullingar.—This building, which is also called the "Hevey Institution," the commencement of which was formerly noticed in this journal, is now completed and occupied. It has been built and endowed by a bequest made by the late Mr. James Hevey. It forms three sides of a quadrangle, and extends about 160 feet in front, and 100 feet on each flank. The entire exterior surface is faced with wrought limestone of the district, the cornices and dressings being of Tullamore limestone. The central portion contains, in the basement, culinary offices, store-rooms, &c.: the principal floor contains the entrance-hall, principal stairs, corridor, waiting-rooms, refectory, and library: the upper story contains the sleeping apartments, oratory, &c. for eight of the community of the "Christian Brothers," under whose charge one department of the establishment is placed. One wing contains four schools, 40 feet by 24 feet, and 16 feet high, with stairs, &c.: 450 pupils are already in daily attendance at this department, under the care of the Christian Brothers. The other wing contains large study-hall for classical and mathematical students, together with suitable dwelling for the teachers, and refectory, dormitory, &c. &c. for ten pupils, who will be selected for proficiency, and maintained on the establishment. The front of the building is furnished with three large projections, finished with pediments and inclosing large Venetian windows. Similar projections, with entrance-porches, are placed in the centre of each flank. The front of the building is surmounted by an open campanile, 80 feet in height. The cost of erection has been about 6,500*l.*

Drumraney, near Moate.—A small chapel has been erected here, cruciform in plan, about 90 feet in length, and 80 feet across the transepts; the nave 22 feet wide, furnished with sacristy, baptistry, entrance-porch, and small belfry. The ceiling is of exposed timber work, and the gables are pierced with triple lancets. Single lancet openings light the nave and transepts. The cost of erection was about 1,100*l.*

Baggot-street.—The Sisters of Mercy have just completed large additions and alterations at their convent, including an open cloister leading to the schools, new staircases, workrooms, chapel, &c. The chapel is 80 feet by 20 feet, with an elliptic groined ceiling, and paved with Maw's encaustic tiles, of a rich pattern. It is furnished with forty stalls, of carved oak. A large window, containing the "Fifteen Mysteries," in stained glass, the gift of William Forde, esq. is placed in the end over the altar. The same community have also made extensive additions to their house at Booterstown, including poor schools, dormitory, refectory, choir, &c. &c.; and also at their convent at Athy, additions are now in progress, containing schools, class-rooms, cells, infirmary, novitiate, kitchen, choir, &c. &c.

Mr. John Bourke is the architect of all the foregoing works.

FOREIGN RAILWAYS AND OTHER WORKS.

ACCORDING to the terms of the convention entered into between the Western Company of France (*Compagnie de l'Ouest*) and the Government, the earthworks and masonry of the line from Rennes to Brest are to be executed by the State, the company, on the other hand, foregoing the subvention agreed to for that line. The benefit that will accrue to the Western Company by this arrangement is valued at 10,000,000 francs (400,000*l.*). It is possible that there were some miscalculations in the original estimates of this branch. The line from Pont l'Evêque to Trouville has, however, been agreed to, to be constructed by the company; and, being a cheap branch, its traffic is expected to be able to pay the interest of the cost of construction.

Between Marseilles and Toulon the works make rapid strides. The two long tunnels are open throughout, and the other important works on this line, though of an extremely difficult nature, are satisfactorily progressing. The first section, that of Marseilles to Aubagne, can be open for circulation in the month of September next, and the rest of the line in the spring of 1859.

The works of the "*Chemin de Fer Américain*" (as tramways are styled on the Continent), between Montdidier and the Breteuil Station, are to be commenced immediately, as soon as the engineer of the company has completed the survey for levelling a portion of the Imperial High-road No. 35, near Mesnil-Saint-Georges.

The Spanish Government, during the month of July last, authorised the surveys to be made for the following railways:—

1. From the mines of San Juan de las Abadesas to the port of Rosas, passing through Olot.

2. Lorca and the port of St. Juan de Aguilas.

3. Cuença to Ligüenza, through Molina of Arragon.

4. Seville to Huelva, passing through Coria, Manzanilla, Palma, Villarosa, Nieblas, and San-Juan del Puerto.

5. The port of Ventana to the mouth of the Praira, to the San Estaban or Castillo points, passing by Proaza, Trubia, Penaflor, and Grado.

6. On the provincial road from Granollers through Vich to Ripol and San Juan de las Abadesas. These two last are to be worked by horse-traction.

On the Northern Spanish Railway, in the Avila section, 304,711 cubic mètres of excavation, and 387,329 of embankment, have been done up to the present time. Great activity is displayed in forwarding the different structures, among the most important of which we may cite the bridge over the Manzanares and the Torrelodones tunnel, which is open from end to end.

Mr. Van der Kun, inspector of the Waterstaat, has been charged by the government of Holland with the examination of the different railway projects between Belgium and Central Holland. One company demands the following concessions:—

1. Rotterdam to Villemsdorf; the Mœrdijk to Breda; Flessing to Ruremonde; Tilbourg to Bois-le-duc; and Ruremonde to Meersen.

2. The Bois-le-duc and Arnheim, and the Tilbourg line to the Belgian frontier. A subsidy is demanded from the State of 13,000,000 florins, with a guarantee of the minimum rate of 4½ per cent. on a capital of 27,000,000 florins. The estimated cost of the southern group is 40,400,000 florins.

The works on that portion of the Rhine line between Coblentz and Bingen, as we have before remarked, present great difficulties, and some time elapsed before the engineers in charge of the works could make any calculation as to the probable completion of the line. They now assert that the sections from Coblentz to St. Goar, anp from Bingen to Oberwesel will be completed by the autumn of 1859, whereas the small part between St. Goar and Oberwesel cannot possibly be terminated before autumn 1860, on account of its three long tunnels. Among the men employed many are Piedmontese, who were sent for, as being, perhaps, the best men for rock excavation, or tunnelling, that can be met with on the Continent. The Rolandseck and Nettehaus section has just been submitted to its last and definitive testing of the works by the administrative police, and is to be open to the public in fifteen days.

The *Journal du Havre* says that the English steamer *Royal Adelaide* is taking on board at that port six locomotives and tenders for St. Petersburg. They are consigned to the Russian railway company. These are the first six of the order given for forty, and which are being made in four of the principal French firms. The same paper states that a similar order was given in England, and that the engines have been already completed and sent to Russia.

Among the orders periodically issued by the Prefect of Police in Paris, fixing railway fares, is one concerning the communication between Paris and Milan, which for through tickets is to be,—first class, 117f. 65c. (£4 14s. 1½d.); and second class, 98f. 50c. (£3 18s. 9½d.)

The *Océan*, of Brest, says that it is no longer a rumour but a certainty, that the works of the Rennes and Brest line will be pushed forward so as to be finished in 1861 by the "*Ouest*" Company, who remain concessionists of the line. But, in consequence of new arrangements, which the law of 1842 permits to be made with the government, the latter has agreed to pay a portion of the expenses of the construction.

The works of the Kehl bridge over the Rhine are to commence at the end of this month or the beginning of the next. The works are to be finished in two years at farthest. For the temporary bridge there are two contractors who have engaged to put one up in wood in three months, constructed by them conjointly.

M. de Lesseps writes from Odessa that the English Government have withdrawn all opposition to the Suez canal; so he says the new ambassador has assured him.

The Madrid and Alicante railway has just commenced the construction of a bridge over the river Jarama. The rails are laid upon the new portions of the Rhoda station. At the Madrid terminus they are covering in a portion destined for the new offices, and are working at the interior of the rest which has been roofed in.

Directors in the Wrong Box.—At the last general meeting of the Russian railways it had been decided that two-thirds of the *obligations* to be issued should be reserved for the shareholders. This resolution was founded upon an article of the statutes which reserved for shareholders two-thirds of *new shares*. The Russian Government, however, decided that, as *obligations* were *not* shares the above article was not applicable to their resolution. Up to the present 35,000,000 roubles have been issued in 70,000 *coupons*. The government have taken for different charitable institutions 40,000 *coupons*, so that there remain 30,000 for the public. The *obligation* is 500 roubles or about 80*l.*

On the 5th December, 1857, the first section of the line from St. Petersburg to Longa was opened for public traffic for a length of 137 kilomètres. The inauguration of the section, from Longa to Pekow, 134 kilomètres, took place on the 31st July last. Pekow is one of the most ancient towns of Russia, and contains 10,000 inhabitants.

The works of the Northern Spanish Railway have been commenced at Vittoria, by the levelling of the station ground at that town, on the 2nd inst. in order that the buildings and depôts for plant, &c. may be commenced forthwith.

The Russian Minister of Roads and Communications is preparing, at St. Petersburg, the gigantic project of a canal from the Baltic to the Black Sea. It is not yet decided whether it is to be established between the Vistula and the Dnieper, or between the former and the Dniester. In the first case, Odessa would be the starting point, in the second, it would be Cherson.

ST. MARTIN'S HALL, LONG-ACRE.

ALTERATIONS are being made in the orchestra in the great hall at this building, which appear likely to effect much improvement in the appearance of the interior, and in the applicability of the hall to what is its chief purpose. The whole orchestra is now lowered considerably, and the seats are re-arranged on the plan of a semi-ellipse, in place of the former straight line, with curved ends, of plan. The staircase also is being cleaned and painted.

THE SITES OF OLD AND NEW BUILDINGS.

IN most instances the monks of old have shown skill in the selection of sites for those ancient religious establishments which, in their ruins, may be ranked among the chief glories of the land. Round many of these beautiful clusters of building important cities have sprung up, which in some instances have given additional dignity to, and in others disfigured, the more ancient buildings. In some cases the clumps of buildings mixed with trees, gardens, and mounds like those at Durham, and others, give an indescribable charm to the different views of the cathedral and other buildings. From a hundred points, whence the towers and roofs form a fine outline against the horizon,—from middle distance whence the broad masses are enriched by details,—from the river side, and other near points, the piles of building rise up in lofty dignity. Other places, less favoured by nature, at the time of the selection of the site had green banks, trees, and other landscape adornments, which foiled and gave effect to the architecture, but these in modern times have been covered with ordinary buildings, which often hide and disfigure the edifices with which they are grouped.

Tintern, Finchley, Brinkburn, and many other ancient foundations, lie in deep valleys, and most of them are situated close to clear streams, which, while serving the purposes of health, were also acceptable for the fish-supply, which was necessary in those days when roads were scarce and conveyance slow.

In a sanitary point of view, beautiful as some of those old-time works are, they are not so satisfactory, for their enclosed and low position often renders them damp, and the decomposing vegetation of the surrounding roads would have a bad effect: often, however, the old workers selected the little eminences in valleys which afforded the means of drainage and health. We have in our recollection many of these buildings, set like jewels in a rich border, which, besides having the advantage of shelter, have also the means of such efficient drainage as will prevent dampness, and carry off dangerous refuse to the adjoining stream.

In modern times, when we pride ourselves on the advance of our knowledge and civilization, those who wander over the broad lands of England will have noticed buildings which have been erected at great cost, and which have considerable architectural pretension, in such situations that health can never be safe. We could readily point to many large domestic edifices, and even places built for the use of invalids, at the very bottom of valleys, where there are no streams at hand, and where effective drainage is impossible. In such situations, the damp-doctor is constantly at work, vainly endeavouring to battle with moisture, which rises up walls—causing dry-rot in timber, damage to pictures, prints, and other furniture—and what is worse, often producing illness, which is either fatal or difficult of cure. We know large houses—built very recently—which, although wholesome and commanding sites are close at hand, have been put up on spots where good health and comfort are impossible, where the merits of the architecture are lost, and where the landscape gardener may labour in vain. When viewing such misapplication of both skill and capital, we cannot but wish that the artistic feeling, which often guided the choice of the positions of the monastic edifices, was more common in this generation, and joined with a practical knowledge of the laws of health.

KILKENNY ARCHÆOLOGICAL SOCIETY.

THE September meeting of this Society was held in the Tholsel, on Wednesday, the 1st instant, the president, the Very Rev. the Dean of Ossory, in the chair.

Some curious correspondence was read as to the dilapidations at Dunbrody Abbey, and the following resolution was unanimously adopted:—

"That this meeting feels called on to express its regret that the promised repairs at Dunbrody Abbey have not been carried out in the manner which was expected, and that they fully approve of the course pursued by the honorary secretary of this Society, the Rev. James Graves."

The following papers were submitted to the meeting:—"On Money of Necessity, or Siege Pieces, struck at Youghal:" by the Rev. Samuel Hayman. "On Leaden Tokens, struck in Ireland:" by Dr. Aquilla Smith. "On the Charter of Dermot, King of Munster, to the Church of St. John, at Cork:" by Mr. Daniel McCarthy. And "On Cryptic Inscriptions on the Cross at Hackness, in Yorkshire:" by the Rev. D. H. Haigh.

THE WESTMINSTER PALACE CLOCK.

THE authorities seem to be in a complete muddle with the dial-plate and hands for the great clock of the Houses of Parliament. Nearly every day we see an attempt at some alteration, either for better or worse, though generally worse. Any person would naturally suppose, from their numerous experiments, that there had never been a public clock before; and wherein does the blunder consist? Why, in having a set of unmeaning hieroglyphics, instead of the usual bold Roman figures, and also by having so much of the *original diameter* of the dial taken off, by the *enormous* space for the minutes, which look more like the bars of a prison than the minutes of a clock-dial. These, at a very short distance, contract the diameter of the dial about *one-fourth*, and are actually making the dial look small instead of large, as was originally intended. It would have been much better to have had *no minutes at all*, and to have left the full space for a field for the hands to have shown themselves upon, and for the hour-figures to have been in about the same proportion as those of the dials of St. Martin's Church, Charing-cross. This clock has no minutes, and yet no person would be so foolish as to say that they could not tell what the time was *to a minute*.

There are plenty of other examples of effective dials in London, such as, St. James's, Piccadilly; St. Saviour's, in the Borough; St. Paul's Cathedral, &c. &c.: if these or any of them had been taken, there need not have been the least difficulty in preparing the transparent dials of the Parliament House, as, for these large dials there only required the *same proportions* to have been adopted; but, as it is, it seems very doubtful if, after all, we shall be able to see what the time really is beyond a quarter of a mile from the clock.

It should be recollected that the present dial is the second face that has been exhibited there, as the first was, if possible, more ugly than the present one.

The better plan would have been to have had the bold figures and hands *gilt* on a *pale blue* glass on porcelain ground. R. M. C. R.

NINE HOURS MOVEMENT.

BUILDERS' CLERKS.

SIR,—Will you kindly lend the aid of your valuable journal to assist that very useful but over-worked class of men, viz. builders' clerks.

In the firm with which we are connected, we commence, both summer and winter, at seven o'clock in the morning, and never close, even in the slack season, till past nine o'clock in the evening—1½ hour only being allowed out of this for meals. On Saturday we have some small benefit from the four o'clock movement, as we close immediately the men are paid, say seven or eight o'clock. We obtain but three holidays in the year—Easter Monday, Boxing-day, and Bean-feast. These are considered by no means long hours. Now, the nature of this business prevents our obtaining that great boon conferred in nearly every London office—the Saturday half-holiday. But if we were granted some other afternoon—say Monday—our employers would find that they were no losers by their generosity. By inserting this you will greatly oblige. We enclose our employer's card, and beg to subscribe ourselves,

THE CLERKS TO A LONDON BUILDER.

DATA FOR PRICES.

BLIND GUIDES.

HAVING been arranging some schedules of prices for my own use, I was induced to look over several "Builders' Price-books." The one that I consider the best is seriously injured by the printer's blunders, which, as there have been many editions, ought to have been corrected ere now: another, which has only just made its first appearance, is a complete mass of errors, such as making deal wrought one side worth more than the same with two sides. On dissecting some of the prices in the latter book, I find the relative quantity of the *materials* for handrails given as under—

	Deal.	Spanish.	Honduras.	Wainscot.
Straight	1·0	1·0	1·0	1·0
Ramped	2·16	1·6	1·82	2·23
Level circular or Swan-neck ...	2·0	1·8	1·32	1·53
Wreathed	3·7	2·5	1·36	1·3
Scroll		3·57	2·0	2·3

In another book I find the proportions as follows (Spanish mahogany):—Straight, 1; ramped, 3; circular level, 3; swan-neck, 3·6; wreathed, 6; scroll or twist, 6·4.

These certainly come under the head of blind guides, and show that correct data for the foundation of prices are much wanted. Z.

THE CHURCH OF ST. MARY, STOKE NEWINGTON.

THIS large, and, in many respects, beautiful church, was consecrated by the Lord Bishop of London on the 25th of June last. Its erection has been necessitated by the crowded state of the old parish church, which, although it was almost rebuilt about thirty years ago, is inconvenient in its internal arrangements.

The new building consists of a nave with side aisles, a north and south transept, and a deep chancel (44 feet by 27 feet internally), terminated by an apse. The internal dimensions in the clear are, from the western door to the inside line of the apse, 180 feet; from wall to wall of the aisle, 60 feet; and from the inner wall of the north to that of the south transept, 80 feet. The tower stands at the west end, and measures in the clear 16 feet 6 inches: it is very bold and effective, and will be surmounted by a spire, the whole reaching to the height of 220 feet. The arch of the tower displays a stone groined roof, which supports the floor of the bell-ringing chamber. Above the arch opening into the open wood-work of the roof of the church are three windows, which serve to ventilate the building. The external carving of the tower is not yet done. The principal entrance to the church is at its western end. Under the arch of it is a double doorway, separated by a clustered pillar of Aubigny stone. The tympanum over it is partly filled by a circular window; and at the apex of the arch a block bracket is inserted, from which a statue is hereafter to be cut.

In the interior, the capitals of the columns of the nave are carved with foliage, founded upon a study of the natural leafage of English plants: the briony, the oak, the mandrake, the vine, the currant, the mulberry, and others, are all appropriately represented. The chancel is divided from the chancel aisles by two arches on each side, supported by coupled columns of Aubigny stone: in the soffits of the arches are carved forty angels, bearing musical instruments, &c. The pulpit is a temporary one, of stained deal. A rich pulpit which has been designed for the church is not yet ordered. The organ, a fine one, from the factory of Messrs. Gray and Davison, is fixed in the south transept. It rests on a gallery of stained timber. The reading-desk is richly carved. The altar-rail is of oak, supported on gilded iron standards. This is as light as possible, in order that nothing beyond may be concealed. The font is the joint design of Mr. Scott and Mr. Westmacott, the sculptor, by whom it was executed. Its ground-plan is an octagon. On its four opposite sides stand four pillars of imperial marble, with richly-carved capitals of Caen stone. On these rest four kneeling statues, emblematic of the Sacrament of Baptism, cut in Carrara marble. The bowl of the font may be called a vast goblet, in plan a quatrefoil; and on each side of it are carved pateræ of leafage in a circular border. Messrs. Clayton and Bell have already received orders for six windows of stained glass, which are nearly completed. The window of the great north transept is 40 feet high: for this they have designed glass illustrating the lives of the Marys mentioned in holy Scripture. They have also furnished a scheme for staining all the windows in the church, upon an artistic theory.

The north porch extends 9 feet beyond the church, and consists of three gablets, the centre one being the highest, which rest upon a series of arcaded columns. It is intended that the whole shall be enriched with carved rosettes in moulded lines. A plinth of dressed granite runs round the entire base of the church, just above the level of the ground, and gives an appearance of strength and durability. The face of the wall is of Kentish rag, in horizontal courses. The dressings of the doorways, windows, string-courses, &c. are of Box-hill Bath stone. Mr. Scott is the architect. Messrs. Myers and Sons are the contractors. Mr. Foster acted as clerk of the works during the greater part of the building, under the architect and the committee. The stone carving, which is very elaborate, is by Mr. Farmer, of the Westminster-road.

The Rev. Thos. Jackson, M.A. Prebendary of St. Paul's, the rector of the parish, wishes us to express his public acknowledgments to Mr. Arthur Burnand, Mr. Felix John Hamel (solicitor to H.M.'s Customs), Mr. Thos. Howse, Mr. Patrick Johnson, Mr. Wm. Nevill, Mr. Robert Smith, Mr. John Twells, and many others, for the indefatigable and essential aid, and the great liberality with which they have promoted the erection of this structure.

INTERIOR OF ST. MARY'S, STOKE NEWINGTON.——MR. G. G. SCOTT, A.R.A. ARCHITECT.

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THE NEW TOWN-HALL BUILDINGS AT NEWCASTLE-UPON-TYNE.

THE inauguration of the new public buildings in Nicholas-square, Newcastle, took place last week, in the form of several grand musical performances by the Sacred Harmonic and Choral Society of Newcastle.

The main building is of Roman character; the ground-floor being Doric, the first-floor Corinthian, and the attic Composite. The building contains first-class shops on the ground-floor, mezzanine floor over the shops, and capacious cellarage; also, banking offices, and a hotel in connection with the Corn-market and Music-hall.

The Council-chamber is on the first-floor, facing the church. It is 44 feet long by 24 feet broad, and 24 high. The roof is coved, and finished with Corinthian entablature and ornamental ceiling.

The principal committee-room adjoins the council-chamber, on the east side, and the town-clerk's office adjoins on the west side. Along the corridors on each side are placed the several corporate offices. On the second-floor and attic are other public offices, all supplied with lavatories and other conveniences. The entire rental of the ground-floor of the main or front building, including the hotel, is about 1,000*l.*; and estimating the corporate offices at their value, the entire rental of this portion of the building has been put down at 3,000*l.*

The Corn-market is on the ground-floor, extending northwards. It is 173 feet long by 61 feet broad, and 21 feet high, and is lighted by eleven windows on one side and ten on the other, at an elevation of 20 feet from the ground; and by the same number of entresol windows over these, at a 12 feet higher level. It is from these last windows that the principal light is admitted; and by the manner in which it is thrown down by the entresols, the light is equal in the centre of the market to that close to the windows. The floor is laid with Caithness flags, and the ceiling is plastered between the iron girders which support the floor of the Music-hall. Besides market purposes, it may be lighted by gas at night, and used for public meetings, public dinners, &c. Entrance and egress are provided by wide doors on each side about the centre, and the same at the north end. Ventilation is effected by the hopper-like formation of the ceiling, opposite the windows.

The Music-hall is above the Corn-market. It is 147 feet long (exclusive of the organ-loft), by 60 feet broad in the mean, and 46 feet 6 inches high. The floor is supported by wrought-iron girders on cast-iron pillars and brackets, and socketed in the side walls, so as to prevent the possibility of a lateral movement of the walls. The roof is also constructed of wrought iron. The ceiling is divided into panels, and enriched with plaster-work. The hall is lighted in the daytime by ten Venetian windows on each side, and at night from the ceiling by sun-burners: at each alternate junction of the beam is fixed a sun-burner, in all ten in number, by Mr. Bradford, of Manchester, gas engineer: these "sun-lights" consist of rings of gas-jets terminating ornamental bosses, that hang down from the ceiling. The rarefaction of the atmosphere caused by the heat of the burners carries off the vitiated air to flues in the roof. The admission of fresh air is by perforated iron gratings, fixed under the front panelling of the side galleries. These galleries run the whole length of the building. There is also a gallery at the north end. The hall will seat 1,100 in the area, 550 in the side galleries, and 750 in the north gallery—in all 2,400, exclusive of the orchestra. The arrangements, however, will admit of the accommodation of 4,000 persons. There are four entrances to the hall, two at the north end and two at the south; and there are four stone staircases at different parts of the building. An organ, from the establishment of Messrs. Gray and Davidson, of London, is to be erected, at a cost of 2,000*l.*

The extreme length of the buildings now completed is about 300 feet. The extreme breadth, being that of the front in St. Nicholas-square, is 100 feet, tapering backwards to a breadth of 45 feet. The whole has been erected from the designs, and under the personal superintendence of Mr. Johnstone, of Newcastle, architect. Mr. R. Robson, of Wideopen, was the contractor, and supplied the stone from his quarries. The slaters' work was executed by Mr. Beck; the plumbers' work by Mr. Henderson; glazing, painting, and gilding, by Mr. Greaves. The iron girders and roof were manufactured by Messrs. Hawks, Crawshay, and Son, of Gateshead, and the principal carvings in stone were by Mr. Scott, sculptor. The ornamental railings in the Music-hall were executed by Mr. Donkin, of Newcastle. The plaster work was executed by Mr. Alderman Dodds, who transferred the services of his workmen to Mr. Robson, to assist him in carrying out the work. Mr. Sopwith supplied the upholstery work.

A further important addition will probably be soon made to the north end of the present erections. The existing Town-hall buildings will then be extended about 60 feet northwards, making the total length 360 feet. In this extension it is proposed for one thing to accommodate the School of Design upon a very moderate rental. The cost of the proposed new erections will be about 4,000*l.*; which, added to the cost of the sites and old property, will make a total of about 13,000*l.* About 30,000*l.* will cover the total outlay upon the present buildings when thoroughly finished. The original contract with Mr. Robson was about 17,000*l.*; but in consequence of improvements subsequently introduced, the cost has exceeded the estimates.

OLD WROUGHT-IRON WORK.

How did it happen that the Government sold by auction, at less than their value as old iron, the wrought-iron gates from Greenwich Old Palace, as we are told they did? At any rate there are the gates at Mr. Pratt's, in Bond-street, in perfectly good order, and though not particularly handsome, certainly a dozen times more interesting than the cast-iron affairs put up in their stead. Pratt's place just now is full of iron gates and railing. There is a very curious set of gates from Constance, including figures in the foliage, and partly chased as well as wrought. These are designed to produce a deceptive perspective effect when viewed at a distance. The best piece of work, however, is a balcony front from Augsburg, in Bavaria.

ELECTRO-TELEGRAPHIC PROGRESS.

ALL the enthusiasm excited by the electrical union of the Old World and the New appears to have been concentrated in the heart of Brother Jonathan, on the other side of the water. While the Britishers, as a people, took it coolly, and seemed as if they were asleep over it, the *United* States men were not only wide awake, but "wild with excitement," entranced and "transported out of themselves, as it were," with "feelings of glorification" and "great rejoicing," such as "could not be described," even at New York. It is clear, in short, that, notwithstanding all their "bunkum" pretences to the contrary, our American brethren have a warm side towards "the old country." As for the cord of concord itself, it was said to be "working splendidly," when, all of a sudden, the public were informed that the continuity had ceased. Mr. Whitehead, the electrician-projector, however (who, by the way, appears to have been rather scurvily treated in this affair), assures us all that the break is probably only at the shore end, near Valentia, where it was before chafed by the waves; and this it is earnestly to be hoped will turn out to be the case.

The slowness of the signals through the telegraph did not depend on the *retardation* of electricity in passing through the length of wire. The first signal made at any one time was transmitted *almost instantaneously*; but the wire did not readily *part with* the charge, and the electricity it *retained* prevented the effects of a second signal from being perceived at once on the distant instrument. This peculiar effect begins to show itself in an immersed wire at a distance of fifty miles, and it increases in force as the distance increases, so that, at 200 miles, communication by Morse's telegraph would be impracticable, unless means were adopted to *counteract* the detaining influence of the external conductor. Now, the best possible mode of so counteracting the retention of the electricity, one would think, must be the alternate transmission of the two contraries—the negative and positive—and doubtless this was one of the chief purposes in view in working the line by these alternately.*

At first only one word in two minutes could be transmitted from Valentia to Newfoundland or *vice versâ*, but afterwards, it seems, five words could be sent in one minute. A system of abbreviations, moreover, analogous to those used in short-hand writing, is being prepared, in order still further to expedite communication; and although this may multiply the chances of error unless very discreetly arranged, it will doubtless very greatly increase the rapidity of verbal intercourse between Europe and America, if, as will be the case, single signals can be made to denote each some word of common or frequent occurrence in the ordinary construction of the English language. Even as it is, the rapidity with which intelligence can be sent to us from America must be vastly greater than that with which continental news is transmitted to us, even were it from less than half the distance; because in the former case a single transmission, in a single language, through 2,000 miles of telegraph, is all that is requisite to send the intelligence from Newfoundland to Ireland; whereas, in the course of a few hundreds of miles across the Continent, there may be several lines to be worked, as well as several languages to be translated, ere the intelligence can reach its destination.

The ready means which the Atlantic telegraph would afford of ascertaining the exact differences of longitude between places far apart in Europe and America is one of the many practical advantages to be derived from its completion.

Mr. Bright, the Atlantic Company's engineer, has been *fêted* in Ireland, first at a dinner given in his honour by the Lord Mayor, and then by the Lord Lieutenant, by whom he has been knighted.

The financial and general position of the Atlantic Telegraph Company was recently reported to be nearly as follows:—Their original paid-up capital was 350,000*l.* and this has since been increased to 456,000*l.* Out of this the charge for the entire cable has been paid, together with all other expenses. The colonial concessions to the company give them an exclusive right for fifty years as regards the Newfoundland coast, and the shore of Labrador and Prince Edward Island, and twenty-five years as regards Breton Island. They have also a similar privilege for twenty-five years from the State of Maine. From the respective Governments of Great Britain and the United States the terms obtained are a payment of 14,000*l.* per annum from each for the transmission of their messages for fifty years, until the dividends amount to 6 per cent. on the original capital of 350,000*l.*; after which each Government is to pay 10,000*l.* a year, such payment to be dependent on the efficient working of the line.

The representatives of the European powers who decided on granting an indemnity to Professor Morse for the use of his electrical apparatus, have come to a definitive understanding. At the conference held in Paris on the subject, Austria, Belgium, Holland, Russia, Sardinia, Rome, Sweden, Tuscany, and Turkey, were represented each by a political agent; and the sum voted was 400,000f.: of which France will pay 150,000f.; Sardinia, 15,000f.; Rome, 5,000f. &c. The money is to be paid in four instalments.

The Submarine Telegraph Company have just declared a dividend of 8 per cent. per annum for the half-year ending 30th June last.

The prospectus has been issued of the Indian and Australian Telegraph Company (1st section), with a capital of 500,000*l.* in 20*l.* shares. The proposal is to continue the Red Sea line from Ceylon to Singapore, and eventually to carry further sections to Hong-Kong and Australia. Application is to be made to the Government for a guarantee.

Another gigantic telegraphic scheme under the name of the European and American Submarine Telegraph Company, is projected. The company propose to start a line from Plymouth, and proceed to Cape Finisterre, where a junction will be effected with a line from Bordeaux and the south of France. From Cape Finisterre, the line will proceed to Cape Rocco, near Lisbon, and from thence it will be carried westwards to the Azore Islands, touching at San Miguel, and leaving the group at Flores; whence it will proceed to traverse the Atlantic Ocean direct to Boston in the United States of America, or to Bermuda, and thence to Cape Hatteras in North Carolina, or such other places as may be hereafter determined. By this system England, France, Spain, and Portugal will be brought into direct communication with each other, as well as with the North American continent. Another branch of this undertaking will consist of a cable proceeding from near Lisbon to Gibraltar, and thence to Malta, which will complete, with the powers already obtained for laying lines eastward of Malta, a British and perfectly independent submarine telegraph between England and our Indian empire.

The telegraph to the Channel Islands has been

* Our recent remarks on this subject have excited some interest; and a correspondent of the *Morning Advertiser*, under the signature "John Percival," having read an extract from these remarks, points out various facts corroborative of our views. It would not be fitting, perhaps, to enter further on these in the midst of our present hasty notes on electro-telegraphic progress; but we may here refer those who wish for a little further information on the subject to an article in the *Builder*, vol. xii. p. 580, titled "Electricity, and its alleged Connection with Disease,—what *is* electricity?" and to various incidental allusions to it in our columns both before and since that time.

inaugurated by messages despatched to and from her Majesty.

A great cable by Glass and Elliott for the Electric and International Telegraph Company will shortly be laid between this country and the Hague. This is the largest and heaviest cable that has ever been yet manufactured. It combines four wires in one, and is otherwise of such strength and weight that if a vessel be so unfortunate as to catch her anchor in it she would infallibly lose it, as she can neither raise nor break this cable. The weight of the cable is nearly 10 tons per mile, and its breaking strain is upwards of 100 tons.

The Berlin papers state that the Russian Government have been for some time in treaty with the British Transatlantic Company for laying a cable across the Straits of Bhering. This project of the Russian Government is founded upon a memoir by Mr. Babinet, of the French Institute, and approved of highly by Mr. Humbolt.

THE ORPHAN WORKING-SCHOOL AND THEIR TENANT.

We have been requested to publish a long statement on the part of Mr. Thomas Henley, showing how the Corporation known as the Orphan Working School have ruined him by proceedings in respect of an agreement made by him in 1855 to build sixty houses on their vacant ground at Haverstock-hill. Houses were to be built in a certain time, and advances, under conditions, were to be made by the Corporation. The conditions were not complied with, the advances were refused, difficulties were increased by a fire, the builder could not sell, and then came actions at law and all their expenses, a forced sale, and, according to the statement before us, the utter ruin of Henley. Whether or not the Corporation have pressed their legal rights too strictly (anything more than this their character forbids the suspicion of), we may not pretend to decide on an *ex parte* statement, and to print this statement would produce but small advantage to any.

IRON CHURCHES.

In the present age of improvement and patent inventions, cannot something be done to improve architecturally the various iron structures we see erecting by the many eminent firms in the iron trade? Surely something might be done to make their churches and chapels more worthy in architectural character. To my mind, the buildings already erected are so cold and crude, that I feel rather surprised architectural writers have not taken up the matter, and thrown out suggestions, by which the material might be more satisfactorily applied even for temporary uses.

Why do not the contractors for these buildings engage an experienced designer to furnish them with drawings and details for such structures, and not leave the matter entirely in the hands of their foremen or mechanics, to construct into all manner of absurd features, which must eventually impair such material from becoming generally adopted? For I feel convinced, unless something is done to regenerate the taste already displayed, iron, as a material, will be superseded by a material more pleasing and less obnoxious to public prejudice.

C. Defe.

SCENERY AND THE STAGE.

The Haymarket Theatre.—The painting of the theatre has been revived during the recess, the decorations re-gilt, and although there is no change apparent, all looks fresh and bright. At the pit entrance an attempt has been made to lessen the ancient danger, commented on by one of our correspondents a few weeks ago, by the introduction of a barrier to divide the pressure of the crowd. A new act drop has been painted by Mr. William Callcott, representing "The Cart of Thespis." It is in truth a picturesque landscape, with a group in the foreground around Thespis, who is gesticulating violently;—too violently for a scene which people have to look at continually. Thespis, it will be remembered, lived six centuries before Christ, so that a little severity and archaicism would have given character. However, it is a well painted and pleasant landscape. The comedy with which the season was commenced, *The Way to Keep Him*, was exceedingly well played, and will probably keep its place for some time.

Burford's Panorama.—Those who, unhappy, are forced to remain in town, and cannot join the thronging crowd of Anglo-Saxon wanderers now penetrating every recess of France, Belgium, Germany, and Switzerland, may go to Mr. Burford's and refresh their brick-and-stone-worn eyes with as pleasant a view of the country round the Righi as was ever painted. Those who know the place may identify every lake and mountain peak, and those who do not may see where Alps o'er Alps arise and Pelion's piled on Ossa.

Polygraphic Hall.—The conjuror Frikell is here, and will amuse those who like to be puzzled: very neatly and cleverly are his tricks performed. The fact that such skill of hand *can* be obtained by application, should be a stimulater in other branches *of art*.

New Theatre and Music-Hall, Greenock.—The foundation stone of a structure of this class was recently laid at Greenock, by Brother John Scott, senior, acting grand master, and in presence of the Provincial Grand Lodge, West Renfrewshire; Port Glasgow Doric; Glasgow Thistle and Rose; St. Mary's Patrick; Glasgow Thistle; Glasgow St. Clair; and Greenock St. John, and a vast assemblage. Two bands were in attendance. Brother David Crawford deposited the jars containing the coins and documents into the cavity in the stone, as also a plate suitably inscribed. Mr. Stephen Edmund Glover is the proprietor; Messrs. John Potts and Son, the architects; Messrs. Adam, Brown, McLachlan, Swan, and Broadfoot, the contractors; and Mr. Thomas Tomlinson, clerk of works.

ARCHITECTURAL UNION COMPANY.

We are glad to hear of some movement in this quarter. On Wednesday last the Board accepted Messrs. Hack and Son's tender for the works in Conduit-street, at the sum of 4,496*l.* the contractor taking a good proportion in shares, redeemable by the company at par. The ground-floor, which is let, is to be made ready by Michaelmas, and the Institute room by Christmas.

IRISH RAILWAY AND OTHER MEMORANDA.

The metropolitan terminus of the Dublin and Wicklow Railway presents a busy scene, a large number of workmen being employed, and extensive structures in progress. The new viaduct in Harcourt-street will cost 7,096*l.*; the road and goods store, 3,304*l.*; the station buildings, 8,502*l.*; and 1,697*l.* for the new iron lattice bridge (Messrs. Courtney and Stephens engineers), which is to convey the line across Harcourt-road; making a total of 20,599*l.* The principal front of the station faces Harcourt-street, and extends 130 feet. It has a central pediment, with pilasters, at either side, and a lofty arch beneath, with two smaller semicircular arches, forming entrances to first and second, and third classes, respectively. Doric columns are introduced, and the frieze of entablature ornamented with triglyphs. At the left hand side of the principal entrance is a commodious parcel-office, and on the right the booking and other offices are placed. The ground floor of the building is lighted by eight windows in the intercolumns of a colonnade, and the first floor by six elliptical windows on the western flank. The station building is constructed chiefly of granite stone from Dalkey quarry, but black stone is observable in some portions, especially in the great arches of the viaduct at the rear, and which causes a very marked contrast. An apartment, 38 feet by 26 feet, is provided as a sort of general hall, and is to be ornamented in strict character with the style of the front. This is a new feature in *Irish* railway termini. The staircases are of stone, and the platform 400 feet in length by 25 feet in width, 350 feet of the length being covered in with a glass and iron roof, now in course of erection. The usual apartments for station-master, waiting-rooms, retiring and other offices, cloak rooms, &c. are provided. The goods store is approached by a carriage-road, with an incline of 1 in 20 feet, and has its entrance in Hatch-street. The second section of the new lattice bridge is now ready, and the station is expected to be open in a month or so, though the foundation stone was not laid till last May. Mr. George Wilkinson is the architect, and Mr. Cunningham the contractor.

The matter in dispute between the Dundalk and Enniskillen Railway Company and Messrs. Killen and Moore, contractors, has been settled by arbitration. The contractors claimed 67,000*l.*, but the award of the arbitrators was only 18,750*l.*, including costs.

The works on the Belfast and County Down Railway, between the junction and Downpatrick, a distance of nine miles, are, according to the report of Sir J. McNeill, C.E., in a very advanced state, six miles being formed and ready for the rails. Two bridges only remain to be completed, besides the one over the Quoile, and all are in rapid progress. The joint sleepers of the finished portion are composed of malleable iron, and the joints of the rails secured with bolts and nuts to malleable iron plates, causing smoothness and uniformity of motion. The stations at Comber, Ballygowan, Saintfield, and Ballinahinch, as also the goods warehouses, are advancing towards completion. The workshops at Belfast terminus are finished, and the whole establishment will soon be in working order.

A new church is proposed to be erected at Kingstown, near Dublin, and it is intended to afford sittings for nearly 600 persons on the ground floor and in a small gallery, with capability of enlargement hereafter, so as to accommodate 1,000 persons, by extending the transepts. Further particulars will be given in a future number.

The new Presbyterian church at Bray, county of Wicklow, is to be consecrated immediately.

INSTITUTION OF MECHANICAL ENGINEERS.

MEETING AT NEWCASTLE-UPON-TYNE.

A special meeting of this institution was held in the week before last, at Newcastle. The proceedings extended over three days, and were well attended.

The proceedings of the week consisted of the reading and discussion of papers, in the Council Chamber of the new Town-hall buildings; a *conversazione* and exhibition of engineering models, drawings, &c. at the rooms of the Literary and Philosophical Society; a public dinner, and visits to the principal engineering and manufacturing establishments of Newcastle and the neighbourhood, which were thrown open to the inspection of the members of the institution.

The most important of the papers read was one by Mr. W. G. Armstrong, F.R.S. of Elswick, the inventor of hydraulic cranes, &c. and of the hydro-electric machine. The subject of this paper was the water-pressure machinery invented by the author of the paper. He states that the subject was first impressed on his attention about twenty-three years ago, by noticing a small stream of water which flowed from a great elevation, down a steep declivity, and turned a single overshot wheel near the end of its course. Observing that the portion of the fall thus utilised was not more than a twentieth part of the whole descent, he was forcibly struck with the inadequacy of the wheel as a means of realising the power of such a fall; and conceiving it practicable to render the entire head available by bringing down the water *in a pipe*, and causing it to *act by pressure* upon a suitable machine at the bottom, he applied himself to devising an engine to be worked by such a pressure.

Other inventors, guided by the same idea, had been previously led to apply water pressure in various ways to the propulsion of machinery, although the principle had never been extensively adopted; but with these applications, Mr. Armstrong, who was not then an engineer, was wholly unacquainted.

After meeting with many difficulties and discouragements, as is usual in such cases, the machine was produced. It was tried first in Newcastle, with the pressure from the street pipes, equivalent to a column of about 200 feet; then in Gateshead, with a still greater pressure; and in both cases it yielded a very high effect in relation to the theoretic power of the moving column.

Having thus had practical experience of the power residing in street water pipes, he conceived the idea of applying such power to the cranes, at that time so slowly and expensively worked by hand upon the Quay of Newcastle. Accordingly, after duly considering the means of effecting this purpose, a working model of a hydraulic crane was constructed. It was connected with the town water pipes, and went through the several operations of lifting, lowering, and slewing, in a very satisfactory manner.

The next step was to carry this scheme into actual practice; and, accordingly, in the year 1846, the first hydraulic crane was erected at the upper end of the Newcastle Quay, where it has ever since continued to do good service in discharging ships.

The introduction of the accumulator, which took place in the year 1851, removed all obstacles to the extension of water-pressure machinery, which has since been applied in nearly all the principal docks, and in many of the Government establishments, in this country. Nearly 1,200 hydraulic cranes, hoists, and other machines of that character have been applied, and 125 steam engines, collectively of more than 3,000 horse power, are now daily at work to supply the pressure for working them.

The system has also been adopted in many of the principal railway stations, not only for cranage, but also for working turn-tables, traversing machines, waggon lifts, hauling machines, &c. It is also extensively used for raising and tipping waggons in the shipment of coal, for opening and closing swing-bridges, and for many other purposes which it would be tedious to enumerate. In fact, new forms of application are continually being developed, and no doubt can be entertained of its capability for further extension.

After some discussion on Mr. Armstrong's paper, others were read;—on the manufacture of steel on the Uchatius process, by Mr. T. Spencer, of Newcastle; on floating corn-mills for the navy, by Mr. W. Fairbairn; on railway springs, by Mr. T. Hunt, of Crewe; on locomotive axles and couplings, by Mr. W. Fairbairn, junior; and on an improved railway switch, by Mr. J. A. Haswell, of Gateshead. Elswick was afterwards visited, and the *conversazione* held in the evening. Next day other places were visited, and the public dinner partaken of in the evening; and on Thursday an excursion was taken by railway to Jarrow, Sunderland, and elsewhere.

LAW NOTES.

Validity of a Church-rate.—A rate of twopence was proposed, and an amendment of a halfpenny-rate then introduced. The amendment was negatived, and a poll refused to be taken upon it. The original motion was then carried. The seconder of the amendment again demanded a poll, and it then appeared that the original motion was only carried by a majority of one. It has been held that the refusal to grant the poll on a perfectly legal amendment was illegal, and so the whole proceedings were declared null.—*Churchwardens of St. Michael's, Oxford*, v. *Luff*.

Bankruptcy.—Where there are two partners in a firm, and each has been declared bankrupt upon his own petition, and both are afterwards made bankrupt under a third petition by a creditor against them jointly, the Court will give effect to the joint petition.—*Re Powell*.

Trader-debtor Summons.—The particulars of demand were served upon one partner, and the summons upon another partner, and it did not appear by the affidavit of debt that the particulars were served at the place of business of the firm. It was held that the affidavit was not sufficient to make the firm liable under the Bankrupt Act.—*Ex parte Kentish*.

County Surveyor.—An action for a personal damage resulting from the want of proper repair to a county bridge will not lie against the county surveyor either at common law or by statute.—*McKennon* v. *Penson*.

Damage to Sub-stratum.—The withdrawal of any part of the sub-stratum, to the support of which the owner of the adjacent soil or house thereon is entitled, is a cause of action as an injury to the right, although no immediate damage ensues; but no fresh cause of action arises by the occurrence of subsequent damage. Therefore, to an action for damage caused by such withdrawal it was held to be a good defence that a prior action had been brought for the injury, and an accord agreed to between the parties.—*Nicklin* v. *Williams*.

Indemnification of Directors.—A. the promoter of a public company, applied to B. to become a director, and wrote him a letter, in which he undertook to guarantee him harmless from all expenses as director. It was held, in an action by A. against B. on a bill of exchange, that B. might set-off against the bill travelling and other expenses incidental to his acting as director of the company.—*Hutchinson* v. *Sydney*.

Privilege of Magistrate.—A magistrate attending petty sessions in the discharge of his duty is privileged from arrest.—*Clendinning* v. *Browne*.

Rent Guarantee.—A. let premises to B. at a certain rent, payable quarterly, and C. signed the following guarantee:—"And C. does also agree and undertake to see the rent paid quarterly by the said B. or otherwise does agree to pay the said rent quarterly for the said B." An action was brought against C. on this guarantee, and it was held to be a binding instrument, and to imply a sufficient consideration for the promise.—*Caballero* v. *Slater*.

Lien on Goods hired by Tenant.—An innkeeper has not a lien for his guest's bill on a piano hired by the guest.—*Broadwood* v. *Granara*.

Powers of a Company.—A waterworks company employed an engineer to investigate whether an increased and improved supply of water could be obtained. He did so, and reported accordingly. The committee of management determined to apply to Parliament for power to make their works more extensive, and resolved to employ the same engineer to prepare the plans required by the standing orders. At a special general meeting, the committee were empowered to proceed, and the engineer's engagement was sanctioned. He prepared the plans, and an action had to be brought for the lithographing against a corporation which had bought the company's works, and had become liable to pay their debts. Barons Martin and Channell considered the plaintiff entitled to recover, as the work was within the powers of the Company. Baron Bramwell dissented.—*Bateman* v. *Mayor of Ashton-under-Lyne*.

Alteration of Bill of Exchange.—Where the acceptance of a bill of exchange was altered, without the consent of acceptor, after it was in circulation, by the addition, to the general acceptance, of words implying payment at a particular place, it was held that the acceptor was discharged, though the plaintiff was *bonâ fide* indorsee for value after the alteration, without notice of it.—*Burchfield* v. *Moore*.

Burial-ground — Rate. — Where the churchwardens of a parish made a single rate for providing necessary additional burial-ground for the parish (which could only be done, if done at all, under the Church-Building Acts), and also for draining and spouting a chapel in the parish, it was held that the rate could not be enforced.—*The Queen* v. *Abney*.

IRON IN STONE.

THE stone curb on the Park-wall in Knightsbridge is undergoing its periodical restoration. We have before now alluded to the occurrence. Groups of the iron bars are let into the stone at intervals; and, where this is the case, the expansion and contraction of the metal by change of temperature, or its oxidation, blows the stone to pieces. A score of lengths are at this moment about to be restored with new. The Office of Works should apply to the Museum of Geology, or the Department of Science and Arts, for information, so as to avoid a repetition of the failure. At any rate, the costly lesson ought not to be lost on the inhabitants of the metropolis, before whom it appears to be annually repeated.

THE CROSSING AT CHARING-CROSS.

IF you will take a walk as far as Charing-cross, and look around you, I think you will agree with me that a great improvement might be made there. I am compelled to cross twice a-day from and to Spring-gardens, and I am always in fear of being run over; but if the foot-pavement round King Charles's statue were enlarged, and carried down to a point so as to divide the roadway, nearly as low down as the crossing at Drummond's bank, I should have little fear of crossing then, and much more timid and less active people than I would not so often be put in bodily fear.

There might also be placed an ornamental and highly useful fountain in the centre of such triangular enclosure, as it would be about 10 feet below the top of the basins in Trafalgar-square, and thus might be worked by the water of the two great fire-plugs now running to waste.

J. SIMON HOLLAND.

THE COTTAGES OF PARTS OF ENGLAND AND SCOTLAND.

IT is curious to note, when travelling even in our own country, the great variety in the arrangement and form of the dwellings of the peasantry and poorer classes in parts removed from towns; and it is to be remarked, that the difference alluded to is in a great measure caused by the materials which are to be met with in each district; but the peculiarities and origin of the inhabitants also influence the architectural characteristics which are exhibited.

In woody districts, the cottages erected more than a century back, when roads were bad, and one neighbourhood could not readily be provided with materials from another, are, almost without an exception, of strong timber framework, filled in with slighter materials, and covered with lime; or where that is not handy, some less permanent substance. Over a large part of Staffordshire and Cheshire the exterior of these dwellings is painted white and the timber black. It might be thought that this arrangement would produce a sepulchral effect unpleasant to the eye. It is not so, however, for these houses, often seen amongst chesnut and other trees, are relieved by the clear blue sky: there are also, frequently, red and white roses, and flowers of other hues, bee-hives, and other accessories, which, on the whole, produce a good effect.

This method of colouring may be also noticed in parts of Warwickshire and "Salopia." In the latter county some of the cottage dwellings are little pictures of English comfort: some of these are smothered in flowers and foliage,—a matter which may not be quite right in a sanitary point of view, but is pleasant to the sight. Many of the timber-framed cottages are of great antiquity, some probably three, four, and even more hundred years old; and although the massive frames are warped and out of perpendicular, they promise, if let alone, to stand for many years to come.

In Essex and other counties, where bricks can be conveniently manufactured, we find a mixture which, when covered with different coloured lichens, has a good effect; and it may be noticed, that the red brick of these districts has a sort of madder purple hue, which soon becomes very rich, and harmonises well with all around. In the neighbourhood of Birmingham, towards the iron and coal districts of Staffordshire, the bright gaudy vermilion tint of both the bricks and tiles is disagreeably harsh.

In the neighbourhood of our cathedrals and other important ecclesiastical edifices, the dwellings, and also their fittings, are more or less decorated with carvings and other ornaments. Near St. Alban's, the fronts of several of the houses are covered with rude diaper-work. In Gloucestershire, the stone troughs used for the pigs are so well cut and fashioned, that they might be mistaken for church fonts.

In Somersetshire a light yellow-coloured stone is used for building purposes, which, with age, takes those reddish, grey, and green tints which a painter is glad to imitate. Most of the houses here have some elegance in design, and are more or less ornamented. In Yorkshire a number of the smaller houses are built of substantial stone work, some thatched, and others covered with large flagstones and tiles. As we approach the north, the squarely-formed cottages of cold grey-looking stone, often roofed with red tiles, form an unpleasant contrast with the more artistic dwellings of the same class in the south of England; and it may be noticed that less care is taken to provide flowers and trees than the difference of climate will account for. In and near the city of Durham, the cold effect to which we have alluded is in a measure removed by a covering of pebbles mixed in lime, which, when dry, is coloured of a white or cream tint. Throughout the chief part of Northumberland, the cottages are externally of the same unpleasant form and colour of which we have spoken, but there, stone of a better hue, though of a more perishable nature, is used. Generally speaking, however, the interiors of the cottages in these districts are clean and comfortable. The houses in the pit village, although most unsightly externally, and surrounded by pigstyes, and other evil agencies, are patterns of cleanliness inside. Each dwelling generally consists of two rooms, one leading to the other. The floors are of red brick, which is washed and done over with new colour several times a week. A blazing fire is kept when necessary, and the hearth and sides of the chimney kept of a dazzling whiteness. Clean housewives give it a tint after each meal. The chief furniture of the front room consists of a four-post bedstead, on which is displayed a covering of gay patchwork and chintz-hangings; a mahogany chest of drawers, so polished that you may see your face in it; table, chairs, &c. equally cared for. The inner room, set apart for the sleeping-room of the children, and for the reception of company on Sundays or holidays, is even smarter than the one already mentioned. There is generally a garden attached; and, since cock-fighting has nearly gone out of fashion in those parts, much rivalry takes place in producing the largest gooseberries and cabbages.

Throughout the greater part of Scotland the cottages are of stone, covered with thatch or flagstones, many of which are of the most primitive and inconvenient description. Most of them, like the pitmen's houses alluded to, have two small, low rooms. A considerable portion are in a most dilapidated condition, and we are told that it is not uncommon for the old women to add to their other prayers,—"And may the Lord send us fair weather to sleep in." The arrangements for sleeping in the chief of those places which we have visited are of a very bad kind, the inner rooms being fitted with boxes, with hangings in front, similar to those in the cabins of ships.

A tremendous amount of work remains to be done in providing proper dwelling-places, not

only in the agricultural districts, but also in the fishing villages along the coast. Many of those houses which please the painter's eye are as little favourable to the health of the inmates as to their morality.

INAUGURATION OF THE LEEDS TOWN HALL.

On Tuesday last her Majesty inaugurated the new town-hall at Leeds, on which occasion the mayor, Mr. Peter Fairbairn, received the honour of knighthood. Her Majesty reached Leeds on the preceding evening, and had spent the night at Woodsley House, the mansion of the mayor, and on her way to the hall in the morning "reviewed" a goodly army of 30,000 children belonging to the Sunday schools of the district, who sang to her Majesty the National Anthem.

In our volume for 1853, pp. 690-1, will be found a view and plan of the Leeds town-hall as designed and then about to be erected. The foundation stone was laid in August of that year, by the mayor for the time being. The design was by Mr. Cuthbert Brodrick. The edifice has been reared in the centre of the town, on an elevated platform surrounded by Corinthian columns, supporting an enriched entablature about 70 feet from the ground. The whole structure is of the Roman Corinthian order. The south façade (the chief one) has a deeply-recessed portico of ten columns, with a flight of nineteen steps, 135 feet in length, leading up to it. Pedestals at each corner are placed for groups of statuary, and the spaces between the columns at the sides of the building are divided into two ranges of semi-circular-headed windows. From the centre, over the south portico, the tower, with chimes and illuminated clock, will rise 230 feet from the ground. The hall is 162 feet long by 72 feet wide, and 75 feet high. Its ceiling is arched, divided with five bays or compartments by stone ribs, which are upheld by columns painted to resemble Rosso Antico. Ten bay-windows by day, and ten crystal chandeliers by night, illuminate the whole interior of the building, without glare. The north end of the hall is occupied by the great organ. At the south end is a glass screen, separating the hall from the vestibule under the chief entrance. This vestibule is, in fact, the base of the tower. It is 70 feet high by 48 feet square. The floor is covered with Minton's tesselated pavement, of the same pattern as that made for the Senate House at Washington. In the centre of this vestibule stands the mayor's gift to the hall and town,—Noble's statue of her Majesty. It stands under the dome of the vestibule on a pedestal of polished granite. At a recent council meeting of the corporation the mayor, now Sir Peter Fairbairn, formally made over by deed of gift this statue to the borough. The statue is of heroic size. In the left hand is a sceptre—the right holds a roll of paper. We shall give more precise particulars as to the works hereafter.

We may here add, that to the Fine-Art Gallery in the new hall several contributions have been made. Mr. Jas. G. Marshall has presented Calcott's painting of "Milton dictating Paradise Lost to his Daughters:" Mr. J. G. Uppleby presents an architectural piece by Panini, a battle-piece by Bourgognone, and a portrait of William Pitt: another gentleman has offered to present a full-length statue of the Leeds antiquarian and historian, Ralph Thoresby, provided some other gentleman will present a similar statue of John Harrison, the founder of St. John's Church and the Almshouses, and the endower of the Grammar-school in the town.

STAINED GLASS.

Lincoln Cathedral.—One of the lancet windows above the clerestory in each of the arms of the eastern transept of Lincoln Cathedral, has been filled with stained glass windows, representing "The Four Evangelists." The *Lincolnshire Chronicle* states that they are the workmanship of, and presented by, two of the sons of the late Sir Richard Sutton, who some time ago contributed to the adornment of the cathedral.

Ely Cathedral.—Dr. Charles Heggall, of London, has added a window to the memory of his late wife, a native of Ely. The subject is extended through the lights of which the window is composed, and represents the "Repentance of Nineveh at the Preaching of Jonah." The artist, in carrying out the architectural details, costumes, &c. is said to have consulted the works of Layard and others, and the relics in the British Museum. The windows in the south aisle are already all of stained glass, and the present addition leaves only three plain ones in the north aisle, two of which, it is reported, are taken, and the other, it is said, will be applied for by Mrs. Janes. Her Majesty's window, the third of the four in the Octagon now about to be completed by Mr. Wailes, is in the Decorated style of Edward III. There are eight figures: her Majesty wearing the crown, and the Prince Consort, as Chancellor of the University of Cambridge, Edward III. and Queen Philippa, are the top four; and Bishop Turton, Dean Peacock, Bishop Hotham, and Prior Cranden the lower. The roof of the nave is commenced. It is in the hands of Mr. L'Estrange, the amateur artist, and done without any emolument to himself.

Cuckfield Church.—A new painted window has been erected in the north chancel aisle of this church. The subjects are designed to illustrate the Incarnation of our Lord, the centre light representing "The Holy Child Jesus," with "Mary his Mother;" while on either side are the two prophets of the Old Testament, and the two preachers of the Gospel who chiefly "spake of these things," viz. King David, with his harp; Isaiah bearing a scroll; and also John the Baptist and the Evangelist John. The glass comes from the works of Messrs. Hardman, at Birmingham, and was set up by Mr. Knowles; the repairs of the stonework having been effected by Mr. Constable, of Lindfield.

Wirksworth Church.—A stained glass memorial has been placed here in a new window in the south aisle of the church. The window is of Gothic construction of three lights, containing as many subjects, viz.:—1. The Entombment. 2. The Nativity. 3. The Angel appearing to the Three Women. Over each subject is a canopy, in the centre light of which is an angel bearing a scroll, with the text "Glory to God in the highest," and in each of the others are the shepherds gazing heavenward, the star being in the quatrefoil at the summit of the window. Beneath the texts are as many pedestals. The window is from Messrs. Hardman's of Birmingham. We understand another stained window will shortly be put in; but the insertion of stained glass windows will only retard the general restoration, if, as is the case at the present time, all alterations are made subservient to existing defects. The present flat ceiling, which is so destructive of effect and breadth of tone, ought to be removed. The unseemly galleries which block up the transept call loudly for removal, and we cannot understand on what grounds they have so long been allowed to remain.

St. George's, Doncaster.—The stained glass of the east window of Forman's Chapel, by Mr. Wailes, has been completed. "The window," says the local *Gazette*, "forms rather a striking contrast to the two recently fixed by the same maker. In this we see much more brilliance of colour, better finish, and better material. We must, however, in some measure object to the indefinite and neutral colour employed in some instances: there is likewise rather too much shading to be observed in some portions,—a reminiscence, as it were, of Munich glass. With these few objections we close our fault-finding with the lower portion of the window, and in other respects look upon it as worthy of the maker. As regards the filling in of the tracery, we are sorry to see so great a contrast. From this portion of the window, all that quiet repose which characterizes the lower part is banished. We see, instead, what indeed very closely approaches patchwork; the colour of which is gaudy and ill-balanced. In speaking of the two smaller windows by Mr. Wailes, we noticed the absence of what we termed a peculiarity, if not a defect, in many of his windows, that is, the too great contrast of tone between the filling-in of the tracery and main-lights. We have now before us a specimen of this contrast, and we think most will agree that 'we have gained a loss.' Yet, independent of all these short-comings, the window stands forth as a fair specimen of art. The incidents portrayed are:—1. Joseph of Arimathea and Nicodemus returning home after the Burial of Christ. 2. The Three Marys watching the Tomb all night. 3. The Angel seated on the Tomb, and addressing— 4. The Three Marys—"He is not here." 5. Peter and John looking into the Sepulchre. Underneath which is the inscription to the memory of members of the Seaton family."

St. John the Baptist's, Clayton, Bradford.—A memorial window has lately been placed in this church. As the legend at the foot of it shows, it may be taken as a token of filial affection. The window, architecturally speaking, consists of three lights, trefoiled, carrying a foliated circle. The side lights have their heads filled in with trefoils. The circle, which consists of three trefoils, contains the sacred monogram "I.H.S.;" and the memorial cyphers, the spaces being filled in with vine leaves. In the head of the side lights are the Lamb, the Vexillum, and the Pelican. The centre light contains a full-length figure of Our Lord in the act of benediction. The outer robe is of ruby, diapered, lined with purple: the inner robe is blue, and diapered. This (as well as the other figures) stands beneath an enriched canopy. To the left is the figure of St. Thomas carrying a square rule. His outer dress is of green, diapered, and lined with blue; his inner robe of ruby colour. To the right is the figure of St. John the Baptist, the patron saint of the church, carrying a cross. Beneath these is a series of three medallions, the centre one representing the Ascension, the one to the right Peter holding the keys, and the one to the left St. Paul with a sword. At the foot of the window is the inscription. The glass painter is Mr. F. Barnett, of Edinburgh.

Lancaster Parish Church.—A three-light stained-glass window is about to be placed in the parish church of Lancaster, it having been executed for Mr. Murray Gladstone, of Manchester, as a memorial of his late wife. The subjects are Abraham and Isaac, Moses with the brazen serpent, Mary and Martha before the Saviour, St. John the Baptist, the Raising of Lazarus and the Crucifixion. The window is the production of Messrs. R. B. Edmundson and Son, of Manchester.

Walsden Church.—There have lately been put into this church two new stained windows, or one window with two lights, manufactured by Messrs. Ward and Son, of London. They have been put in at the expense of Mr. John Crossley, of Scaitcliffe, in memory of his late father and mother. In the centre of one of them is a medallion representation of "The Transfiguration," which contains six figures, the centre or principal one of which is our Saviour. On each side of him are Moses and Elias: beneath are Peter, James, and John: above is the figure of an angel with trumpet and scroll; and round the border of both lights are the sprig of acacia, pomegranate, ear of corn, and five-pointed star, alternately. On the second light, near the centre, is a representation of "Christ's Agony in the Garden:" above is an angel with trumpet and scroll.

THE APPLICATION OF PHOTOGRAPHY TO DRAWING ON WOOD,

AND ITS PROBABLE INFLUENCE ON ART.

It cannot be doubted that ere long the means will be discovered of producing as clear and distinct representations of objects, by means of photography on boxwood blocks, as can now be obtained on the prepared paper commonly used; and, when this is done without injury to the surface, it will to a certain extent revolutionize the art of engraving on wood. When, however, this desirable result has been obtained, there will still be a difficulty in adapting nature's printing on wood to the conventional style now commonly used by wood-engravers. At present, in order to ensure effective engravings, it is necessary that the draughtsman should make a drawing bold and distinct in the arrangement of light and shadow, and that it should also have all the tints and textures indicated by *lines*. A drawing simply laid in with Indian ink or other tints would not be useful to the chief portion of the present school of wood engravers. It is to be regretted that this art should have become so mechanical as it has, and that a larger amount of artistic skill and invention should not have been acquired by the rising generation of engravers.

In engraving on copper or steel it is necessary to produce, from a picture or drawing placed at hand, a copy, by means of lines of various form and strength on a plain surface. The copperplate engraver has not only to prepare his own outline, but he has also to invent the manner of laying on and the quality of the lines: he has to produce his work without even the help which would be given by a photographic image.

In order to render the application of photography useful to the chief number of the wood-engravers, it would be necessary to employ a practised draughtsman to indicate the direction in which the lines should be cut. It would be well, however, that the pupils who are now rising up should be taught to dispense with this assistance.

It is curious to speculate on the effect of the extensive application of photography on art generally. Some ask what will be the use of draughtsmen on wood, when a properly organized staff of engravers have been trained to cut from photographs? We believe, however, that, instead of rendering the aid of the artist unnecessary, so great will be the increase in the demand for book and other illustrations for many years to come,

that the demand for draughtsmen will be increased rather than diminished, for there are many subjects which necessarily require intellectual treatment and management.

It is a matter for serious inquiry, however, to what extent the means of the rapid production of the forms of objects, and that too without the long and troublesome process of acquiring skill of hand, may prevent many who might have become good artists from taking the trouble, thinking how useless the long task is when such fine effects can be so readily produced by mechanical means. Looking at the subject in another point of view, it is likely that photography will benefit those who are bent on the pursuit of true art, both in historical, landscape, and other painting, by affording the means of comparing the matter-of-fact sun pictures with their own: and that it will be a means of correcting to some extent that looseness of drawing which has often been considered an imperfection of the English school. Again, will the young artists of the next generation be likely to be so industrious in copying from nature in the green woods, among the rocks and streams, in old cathedrals and picturesque streets, when such result can be obtained with so little hand labour?

When we glance at some of the fine photographs of buildings now available, it is impossible not to acknowledge that, with the exception of colour, they afford all the materials from which an artist of ability could make fine pictures: they will, notwithstanding, fail to supply the careful study from nature which has made such painters as Turner, Constable, Dewint, and others.

Several artists of some eminence now in their wanderings use the photographic apparatus instead of the sketch-book. This may not do much harm to those who are thoroughly conversant with nature, but such a practice cannot fail to be injurious to the progress of youthful students in art.

PUBLIC BUILDINGS IN THE PROVINCES.

Sittingbourne New Corn-Exchange. — The corner-stone of this building was laid on the 26th ult.

Gosport Forts, &c.—Three more large forts are to be forthwith commenced in the neighbourhood of Gosport, which will complete the cordon of batteries intended to surround this important port. Large cavalry and infantry barracks, according to the *Mechanics' Magazine*, are to be built near the Gomer Fort; and these, with the extensive barracks just completed at Gosport, and the numerous other military establishments already existing, will form this promontory into an immense *place d'armes* for the south of England.

Llangwyney-bridge (near Crickhowell).—This project is in a fair way of being carried into immediate execution. The plans and specification for the work have been approved, and signed by the committee and the contractors, according to the *Hereford Times*. The bridge has been entrusted to Messrs. Hughes and Steele, of the Usk-side Iron-works, Newport. There were ten competitors. The bridge is to be constructed of wrought-iron.

Sutton Coldfield Town-Hall.—The first stone of the new Town-hall of Sutton Coldfield was laid on Wednesday in week before last. The proposal to erect a new public Hall was mooted some years ago, but difficulties unexpectedly arose, particularly as to a site. It was originally proposed to erect the public rooms in the centre of the Market-place, on the site occupied by the old Town-hall. For this site the warden and the society first sought plans; but it was afterwards abandoned, as too limited in area. The site which it is now proposed to occupy fronts Mill-street, and comprises over two thousand superficial feet. The building will have two main frontages, the west towards the high road, and the south towards a large open area adjoining the almshouses, which has been cleared in order to avoid the declivity of the hill, and afford facilities for the readier approach of carriages to the principal entrance. The building will be two stories in height; the external dimensions 72 feet long by 38 feet wide, and from the terrace level to the cornice 32 feet high. On the first floor are the Corporation room, 26 feet by 18 feet, an ante-room, and an assembly-room, 50 feet by 35 feet, with an apsidal end 20 feet by 12 feet, fitted as an orchestra, with performers' rooms underneath. On the ground-floor the accommodation given consists of a Magistrates' Court, 35 feet by 20 feet, public waiting-room, prisoners' cell, surveyor's office, reading-room, library, and ante-room. On the basement-floor are kitchens, scullery, heating apparatus-room, and coal stores. The building will be set back from the road about 5 feet, and a terrace formed in front. A flight of ten or twelve stone steps on to this terrace will form the approach to the principal entrance under the tower. The edifice is Gothic in character, and will be executed in red brick, banded with white brick and stone. The windows are grouped double and triple, and the single-light windows moulded with painted arch-heads: the dressings generally are of stone. The contract for the building has been entrusted to Mr. Charles Burkitt, of Wolverhampton. The amount of the contract, including heating, is 3,300*l.*

Enlargement of Ashton Barracks.—It has just been decided that the barracks at Ashton-under-Lyne are to be so enlarged as to accommodate 1,000 men.

Lichfield Museum and Library.—The building which has been erected near the Minster Pool, for the Lichfield Museum and Library, is shortly to be opened.

Baths at Sunderland.—The contractors, Messrs. Patterson and Clark, are making progress in adapting the old Bishopwearmouth Workhouse into new corporation baths and washhouses, for the advantage of the west end of the town. There are to be sixteen baths; those for males on the ground floor, and for females a story above them. The washhouses are to contain sixty stalls, with 120 tubs. A large swimming-bath will be in the centre of the building, which is to be of two depths, to suit boys and adults, and round the walls there will be rings and ropes to provide against accidents. The various apartments will be ventilated by Mr. Watson's patent syphon.

Falkirk Corn-Exchange.— We stated, says the *Falkirk Herald*, that Mr. Alex. Dick, Brighton, Polmont, had been the successful party for completing the mason work of the Corn-Exchange. Mr. Dick, however, has since declined to fulfil the contract in terms of his estimate, and the feuars have accordingly agreed to take the next lowest estimate first given in, namely, that of Mr. Thorburn, builder, Polmont.

Books Received.

SANITARY.

"A COMPENDIUM of the Local Government Act, 1858 (21 & 22 Vict. cap. 98), &c. By Joseph Jones, Clerk to the Derby Local Board of Health," has been issued by Hamilton, Adams, and Co. of London, and Wilkins, of Derby. This is a timely shilling abstract of the new Act for strengthening the hands of local boards of health and sanitary reformers in general. Appended is an account of sanitary progress at Derby, with observations and extracts illustrating the importance of sanitary operations; but containing no allusion to that fruitful source of sanitary observations, the *Builder*: it is some consolation, however, to note how promptly authors discover the sanitary importance of our publication when they require its aid in the promotion of a knowledge amongst the public of their own sanitary efforts.——In "New Purifying Sewers for the Thames" (Weale, High Holborn), M. Hector Horeau, architect, proposes an elaborate system of underground tunnels or tunnel-sewers, of an inverted pear shape, with sub-divisions forming four iron gutters or rivulets, supported by iron bearings, independent of the construction of the vault, and arranged at different heights to facilitate their junction with the present sewers, at different levels, with basins, and sluices for deposits and separation of "purified water" to be poured into the Thames, while the liquid manure found beneath "may be covered with oil to prevent the escape of its valuable gases," and afterwards "sent by pumps, pipes, or casks to the market gardens surrounding the metropolis." "The solid residuum," he adds, "should be covered with lime or alum, to preserve its quality and facilitate its being put into casks," and these raised by pulleys on to one of three railways, with moveable floor placed above each other between the rivulets in his tunnel-sewer, and thence removed. Six galleries in the vault also would be appropriated to inspection of the sewer junctions, fixing and repairing of pipes for water, gas, electric wires, "speaking tubes, and beer conductors, for the different workmen in the sewers," &c. Ventilation would be effected by means of draft chimneys, and in somewhat obscure relationship to which the projector adds that "the workmen should be not only permitted, but even induced to smoke." We fear that M. Horeau, like not a few of his fellowcountrymen, entertains the idea that in England cost is not worth considering. The three little items,—oil for the liquid manure, alum for the solid, and beer pipes for the workmen, would be no trifling items themselves alone; and although a tunnel to contain street sewers and subways, with room for gas and water pipes, &c. was long since urged in the *Builder*, we have considerable doubts as to M. Horeau's modification of the suggestion.——"Remarks on the Main Drainage of the Metropolis, with a Plan of a better Provision for disposing of the solid Matter of the Sewers, with the view of preventing the contamination of the river Thames, and advancement of Agriculture: By James Knight;" is another of those numerous and, in most essential respects, by no means novel schemes which are now and have for some time been afloat. Mr. Knight's proposal is to filter in sewers all the sewage and drainage in its passage to the river, to precipitate and deodorise all the solid matter, and pass the purified water out into the river, while the sludge (1,600 tons daily), is pumped up into pipes, and conveyed by its own gravity to places of deposit for conversion into portable manure for agricultural purposes. Mr. Knight estimates that 2,500,000*l.* out of the 3,000,000*l.* proposed to be expended by the Metropolitan Board might thus be saved.*——The concluding part of that now celebrated work, Copeland's "Dictionary of Practical Medicine," with preface, and classified contents, has been published by Messrs. Longman and Co. To all who desire to know something of hygeiene; the causes, symptoms, treatment, and prevention of fevers, pestilences, &c.; there is no better or more standard work of reference, we are disposed to think, than Copeland's "Dictionary." It is the life-labour of an able and competent author, and embodies the fruits of thirty years' diligence, experience, observation, and reflection.——"Fever in Agricultural Districts" (Parker, London), is a report of cases of fever occurring in the parish of Great Horwood, Bucks, by Dr. H. W. Acland, Regius Professor of Medicine in the University of Oxford. Fever has been endemic in Great Horwood since last year, and Dr. Acland attributes it to overcrowded dwellings, putrescent animal and vegetable matter, and bad ventilation, no less than to destitution, bodily and mental depression, and contagion. A model cottage, he rightly thinks, is much wanted in all such places. The report is an interesting corollary on what we just lately said ourselves on the sanitary state of rural districts.

Bodily Exercise: The third of a Series of plain and simple Lectures on the Education of Man. By THOMAS HOPLEY, F.S.S. London: Houlston and Wright, Paternoster-row. 1858.

GEORGE COMBE, lately deceased, in his "Constitution of Man," and other kindred publications, did a vast deal to advance man's knowledge of the laws of his physical and mental constitution, and the advantages to be gained, and the evils to be obviated, by a due observance of or obedience to them. Mr. Hopley's lectures are based upon cognate principles. The present is the second lecture on bodily exercise. It treats of the effects of exercise after a hearty meal—the sanitary value of cultivating in young people a taste for geology, botany, entomology, ornithology, and natural history generally—the reforms required in schools for females—spinal curvature—a glance at the routine of a fashionable establishment for young ladies—a glance at needlewomen and factory children—deformities among the lace manufacturers of Bedford, Nottingham, &c.—and what has Government done for these? Following the lecture,—which inculcates, in a telling way, many truths which it is desirable to publish as widely as possible so as to aid in forming an enlightened opinion on the subject,—there are appended some remarks on "Wrongs which cry for redress," in which the long hours of labour and overwork of children and others, which even still prevail in some of the manufacturing districts, are shown from evidence collected by authority of Parliament, down to the present time.

Conversations on Natural Philosophy. By Mrs. MARCET: illustrated. Thirteenth edition. Longman and Co. 1858.

THE thirteenth edition of this well-known and admirable work by Mrs. Marcet, for behoof of the young, needs little to be said by us in its behalf. All we would wish to say is this,—consider well, good reader of the *Builder*, ere you decide that *you* are too old to benefit by these instructive "Conversations."

* We may here remark that Mr. Cunningham, of Liverpool, architect, according to the local *Journal*, has "hit upon the exact thing wanted," but we have failed to discover anything novel in that either. Mr. Cunningham proposes a series of tanks at the discharge of a sewer in which to collect the sewage, and mix it with lime into a solid or plastic paste, to be then taken out, and the tank refilled as before.

Reading Lessons. Advanced Series. Fourth Book. Edited by EDWARD HUGHES, A.I.C.E. Head Master of the Royal Naval Lower School, Greenwich Hospital. With numerous illustrations. Longman and Co. 1858.

THE peculiarity and excellence of this work, as we have before noted, consists in this, that it is made up of various essays written by different persons more or less versant with the special subject on which he has been engaged to write. Thus we have here, in the fourth book, essays,—by R. W. Wornum, on the Fine Arts; by Crace* Calvert and others, on Arts and Manufactures; by G. L. Craik and Hugo Reid on Scientific Biography; by John Tyndall on Heat; by Robert Hunt on Light; and so on. Besides these, there are various other essays,—on Meteorology, by James Glaisher; on Animal Physiology, by James Mann; on Natural History, by G. J. Allman; on Astronomy, by Robert Main, &c.; so that altogether this is quite a model book of "Reading Lessons," so far as regards substance, at least; and it is no less unobjectionable as regards style of composition, the essays being carefully written, and clear and popular in explanation.

VARIORUM.

"THE Permanent Way and Coal-Burning Locomotive Boilers of European Railways," by Zerah Colburn and Alexander Holley (New York, Holley and Colburn), is the unattractive first-half of the title of a very important illustrated report, containing facts for a comparison of the working economy of European and American lines, and for the discovery of the principles upon which improvement must proceed. We shall take an early opportunity to abstract some of the information it contains for the advantage of our readers; and in the meanwhile, commend it to the consideration of all who are interested in the construction and working of railways, especially in America. The cost of maintaining and working the American lines eats up everything. The comparison of the two national systems will be found to be very much against that of America, a circumstance and the reasons for which must interest, not only the engineering profession, but the moneyed interest also of this country. The work will be found quite full, too, upon the further Improvement of Permanent Way and Coal-Burning Locomotive Boilers, in which, even here, great interest is now taken, and for which several very novel systems of construction and practice are now on trial.——Under the title of "Board Management," an "Address to Shareholders in Search of a Dividend" has been published (Stanford, Charing-cross), the writer of which calls for the removal of *Boards* altogether, and the elevation of the secretary to power, under a permanent commission with a president for life, appointed by the Crown or the Court of Chancery, subject to dismissal by the vote of shareholders holding three-fifths of the capital of the undertakings, who avail themselves of its machinery. "The Commission to consist of a number of chief clerks for the various departments, whose duties would embrace the whole business, and who should be taken in the first instance from the different railway offices, which would be closed by this plan, and their places, vacant by death or withdrawal, to be filled up by promotion from the under clerks."——The current No. of "Titan" contains, under the heading "*Leviter Legenda*," a long and cleverly written critical journal in Italy, the second of a series.——"A Manual of Domestic Economy, with Hints on Domestic Medicine and Surgery, prepared under the direction of the Committee of the Home and Colonial School Society, for the use of Students in Training Schools, Pupil Teachers, and Others, at the suggestion of the Rev. F. C. Cook, one of H.M.'s Inspectors of Schools. By W. B. Tegetmeier" (Groombridge, Paternoster-row), is a very useful little volume, already noticed in the *Builder*, and which we here again allude to for the purpose of remarking that it has now reached a fourth edition, and has been revised and enlarged.——No. 15 of Vol. II. new series, for May, 1858, of a bi-monthly journal of "Proceedings and Papers of the Kilkenny and South-east of Ireland Archæological Society" has been issued. Besides reports of meetings, it contains Mr. E. Fitzgerald's paper on "Ancient Mason Marks at Youghal," &c. with which our readers are already made acquainted, and another on "The Clan Kavanagh, temp. Henry VIII." by Mr. H. F. Hore.——The first number of a four-penny publication called "The Horological Journal" has just appeared. In the introductory address, the editor declares the chief purpose of this journal to be "that the greatest amount of solid information may be supplied to those who, from the apathy at present manifested in the artistic part of their profession, appear particularly to require a healthy stimulant,"—a purpose, the urgency of which will readily be admitted by all who are cognizant of the way in which Mr. Bennett's endeavours to improve our home manufacture of watches were met at Clerkenwell by the operatives not long ago.——The biographical notice of M. Joseph Gautherot, "the Hydroscope" (or water seer), now in England, and willing to be employed; and the compact little "Guide to the Cathedrals of England and Wales," by Mackenzie Walcott, M.A. (Stanford, Charing-cross), must stand over for a time.

* Mr. Calvert's name, by the way, is, by a printer's error, called, throughout, "Grace Calvert."

Miscellanea.

NEW GASOMETER AT IMPERIAL GAS COMPANY'S, HACKNEY-ROAD.—Messrs. Westwood and Wright, engineers and gasometer builders, of Brierly-hill, Dudley, have nearly completed a gigantic gasometer, from the design of the Imperial Gas Company's engineer. The machinery for the execution of the work is simple, but of unusually large dimensions, on account of the ponderous weights which the contractors had to raise to a great elevation before they could be secured. In a few weeks this monster specimen of engineering will be completed.

DISCOVERY AT DORCHESTER.—A piece of tesselated Roman pavement was found in the gaol-grounds, Dorchester, while excavating a grave for the convict Seal. Upon the discovery, another spot was chosen, and an attempt will be made to preserve this relic of antiquity. The pattern, according to the *Wilts Mirror*, is very distinct, and the colours rich in variety.

EXHIBITION OF INDUSTRY AT LEEDS.—An exhibition, illustrative of the products, manufactures, and industry of the borough of Leeds, has been opened in that town. The idea was suggested by the local committee of the British Association for the Advancement of Science, and the exhibition has been got up under the direction of the Chamber of Commerce. It is held in a portion of one of the wings of the coloured cloth hall, which has been arranged for the exhibition of the various articles contributed. Upwards of 200 exhibitors have sent specimens of their industry, and the exhibition is divided under the following heads:—Natural products; agricultural implements and tools; chemical and pharmaceutical preparations; works from mineral products (not metallic); constructive, plastic, and decorative art; iron, and works composed principally of iron and brass, in nine subdivisions; textile materials and manufactures; paper manufacture, stationery, and lithography; philosophical instruments and general articles of ingenuity and taste. No medals or certificates will be awarded.

MACHINE FOR RINGING CHURCH BELLS.—A contrivance has been patented by Mr. Wright Jones, of Pendleton, engineer, for ringing bells Mr. Jones has fitted up one of his machines in the Tower of St. Thomas's Church, Pendleton. The peal of eight bells is said to be easily rung by a boy. The apparatus, which occupies scarcely a square yard of space, is worked by the simple turning of a handle, which gives motion to levers and tappets. The hammer is fixed near the outer rim of each bell, working on a spindle at the top, over which projects a short lever. To this a wire is attached, which descends over a pulley (or a crank) to the machine. The wires from all the bells in this way converge upon the instrument, and each wire can be regulated in length by a screw, and made to strike the bell with more or less force, as may be found desirable. Uniform turning of the handle is said to be all the skill required by the operator. The swinging of bells may thus be obviated.

GAS.—At the half-yearly meeting of the Birmingham and Staffordshire Gas Company, a dividend was declared at the rate of 10 per cent. per annum.——At the meeting of the Wolverhampton Company, the manager read the thirteenth half-yearly report of the directors, which stated that during the past half-year the revenue derived from gas rental, coke, tar, ammoniacal liquor, &c., was 10,609*l.* 17s. 4d. and the expenditure 6,796*l.* 1s. 1d. leaving a balance of 3,813*l.* 16s. 3d. From this sum the directors recommended the payment of the usual dividend of 10 per cent. per annum, amounting to 3,558*l.* 8s. payable on and after the 8th of September, and the surplus of 255*l.* 8s. 3d. to be passed to the reserve fund, which would then stand at 1,454*l.* 14s. 9d.

BRICK AND TILE WORK AT ERROL.—The numerous brick buildings recently erected, or in process of erection, in this quarter, remarks a Scottish contemporary, betoken the existence of a brick manufactory in the vicinity. This is the most extensive branch of industry in the place, giving, at present, employment to above 150 persons. The improved processes of husbandry have given rise to a great demand for tile for drainage and other agricultural purposes, and in consequence, the works have greatly extended their operations within the last few years. The proprietor at present has an extensive contract with the Police Commissioners for Dundee, for supplying brick for sewerage purposes. Eight "tables" are constantly employed just now solely in making brick, each table turning out between four and five thousand bricks daily. Estimating the weekly quota at 200,000, and the value at 25s. per thousand, this will represent 1,000*l.* monthly as the value of the brick produced here.

THE DEPARTMENT OF ART.—We learn that Mr. Henry Cole has found it necessary, in accordance with the advice of his medical advisers, to seek mental rest by leaving the country for some months. He has proceeded to Italy to make a long-contemplated inspection of the works of fine art there, and will, we hope, derive advantage from the step. He is at present in Turin with Mr. Redgrave.

ACCIDENTS.—Two lives were lost last week at the shop, No. 266, High-street, Poplar, by the falling in of an oven, which some men were employed in constructing. While two labourers were under it, the crown suddenly gave way, and the *débris* immediately covered and suffocated them.——An inquest was held before the borough coroner of Liverpool, on the 28th ult. on the body of a labourer. On the Thursday previous he was employed to connect the drain from a house in Blundell-street with the main sewer. To avoid risk from the noxious gases of the sewer, and the falling-in of the earth, he should first have made an "eye" in the street, and have worked from that to the house. Instead of doing so, however, he commenced driving an underground communication between the house and the sewer, persisting in this course notwithstanding an injunction to the contrary from an officer from the office of the borough engineer. He commenced the work on Thursday morning, and by night he had driven a hole of about 6 feet or 8 feet in extent, and 4 feet or 5 feet square. The occupant of the house asked him if he was going to work all night, and he said he should keep on till twelve. About a quarter to twelve this person, perceiving that his light was extinguished, called for assistance, and a neighbour went with a candle down the hole, and at the bottom found the deceased, buried up to the neck in sand, and apparently dead. The smell of gas was strong. A hole was opened from the street, and, after much difficulty, the unfortunate man was got out, but life was extinct. Verdict: "Accidental death."

THE MAIN DRAINAGE SCHEME.—A meeting of the Greenwich District Board of Works was held on Wednesday before last, at the Board-room, Greenwich, for the purpose of taking into consideration the proposed placing of the outfall and the construction of deodorizing works in the Greenwich marshes. Captain Routh moved the following resolution:—"That any proposition for an outfall at Greenwich, and for deodorizing or defecating the sewage of the southern side of the metropolis in or near the Greenwich marshes, is highly objectionable, and fraught with danger to the health of the inhabitants of this populous district; and this Board therefore protests against any such plan or project, the result of which would be so injurious to persons and property in this district being carried into effect." The motion was seconded by Mr. Reeve, and carried.

FEVER IN THE HOUSE.—Fever lately prevailed in a northern part of London, which proved fatal to three persons in the same house. This was reported to the parish authorities, with the remark that there was nothing the matter with the house in which this event happened. On the spot no exact information could be obtained about the drainage, though it seemed suspicious, but the construction of the house was sufficient to account for fever, inhabited as it was by a number of inmates. This house was one of a row placed back to back against another row. There was no attempt at ventilation in the front door, no back door at all; no window in the staircase, no opening to the roof: the room doors were all close, without perforation: so were the windows. If even the drainage of this fever place be good—a matter which is doubtful—there is sufficient cause in such ill-construction for the development of disease.

COMPETITION: BATTERSEA.—The designs of Mr. Thomas W. Horn, of the Adelphi, have been accepted for the "Battersea Lammas Hall."

DEATH OF MR. ALFRED GEE, C.E.—We regret to have to record the death of Mr. Alfred Gee, civil engineer, occasioned by an accident on the line of railway which is in course of formation in Spain under his auspices. The particulars of this painful event have not yet reached this country.—*Lancaster Guardian.*

LEICESTERSHIRE ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.—A meeting of this society was held in the Town Hall, Leicester, on the 30th ult. the Rev. G. E. Gillett in the chair. The secretary laid before the committee a statement of the expenses incurred by the society at the annual meeting held at Market Harborough on the 28th July, amounting to 9*l.* 14s. 6d. which were approved and ordered to be paid. Various objects of interest were exhibited. Mr. Thompson laid before the committee memoranda concerning discoveries recently made in Leicester, in excavations required in the extension of its sewerage system. It seems that in every part, relics of the Roman period (from A.D. 50 to 450) are repeatedly met with. What is considered worthy of preservation generally finds its way to the Leicester Museum. The foundations of an extensive building have been lately partially uncovered. Mr. Gresely read a paper on some building remains of thirteenth century, at Medbourne.

DEATH FROM IMPERFECT SEWERAGE.—On Monday last Mr. Baker held an inquest at the City Arms, on view of the body of Catherine Nathan, aged eight years, whose death arose from inhaling a noxious effluvium emanating from a sewer. The deceased, it appeared, was living with her parents in London-street, and was in good health up to a few days ago. In the course of the week a most noxious effluvium emanated from the grating in front of the house, which so affected the deceased that she was seized with vomiting, and died in consequence. Mr. Bevington, surgeon, Brook-street, Ratcliff, stated that he was called to attend the deceased, and that it was his opinion deceased's death resulted from the sewer. The jury returned a verdict to that effect.

WOLVERHAMPTON SCHOOL OF PRACTICAL ART. A meeting to inaugurate the opening of the fifth session of this institution was held on the 2nd instant, at the institution, Darlington-street, Mr. E. Perry, one of the vice-presidents, in the chair. Mr. George Wallis, of the Department of Science and Art (formerly of this town) delivered an address to the students, as did also Mr. Mückley, from Burslem, the newly-appointed head master of the school. The walls of the room were decorated with old engravings and works of art, &c. In his address to the students, Mr. Wallis, amongst other points, spoke of symmetry. They were called upon, he remarked, by the action of their eye, to judge of the symmetry of an object; and, unless they could judge absolutely of perfect symmetry, they could not detect when an object was not symmetrical. Natural objects were not absolutely symmetrical: two sides would, to a certain extent, differ from each other, and as they seemed symmetrical, the practised eye only could detect the deviation. It might be said that the two sides of a man's face were alike, but he said that generally they were not, and it was because common-place portrait painters persisted in maintaining the former proposition, that they produced such insipid portraits as they did. If they took up a doll in which every thing was perfect as regarded symmetry, they would find it perfectly insipid. To draw a face correctly it was, therefore, necessary that the painter should be able first to ascertain whether it was absolutely symmetrical, and, if not, how much it deviated from absolute symmetry. If they could not detect the deviation, then he told them they could not draw the face; they could not give that truthful representation of it necessary to convey the character. The same remarks held good in drawing objects from nature. Therefore he told them again that, while learning to draw, they must draw the two sides of the perfectly symmetrical object placed before them, though, when they were proficient and came to the practice of the art, to draw the two sides would be a waste of time. A vote of thanks to Mr. Wallis was unanimously adopted.*

* A testimonial has been presented to Mr. Wallis by a number of gentlemen interested in the progress of art in Birmingham. Since his resignation of the appointment of head master of the Birmingham School of Art, Mr. Wallis has been engaged in organizing the exhibition of works designed or executed by students of the Schools of Art at the South Kensington Museum. The present from his friends consisted of a drawing-room time-piece, in bronze, surrounded by figures representing Faith, Hope, and Charity, and a tea service in silver.

THAMES DITTON.—The first stone of a new parsonage-house was laid by Lord St. Leonards, on Friday last, in the presence of the incumbent and the principal part of the inhabitants, and children of the National schools. Mr. Giles is the architect, and Messrs. Dodson and Son, the builders.

HONOURS FROM ROME.—We understand that the Pope has conferred upon Mr. Edward Pugin, architect, the order of St. Sylvester. It was communicated by Cardinal Wiseman, at the celebration of the Ushaw College Jubilee, in testimony as well probably to the services of the father as of satisfaction with the works of the son.

PROSPECTS IN THE COLONIES.—The discovery of gold in British Columbia (says the *Canadian News*), will give a vast impetus to the growth of our power on the westward side of the continent, and will hasten forward that line of railway from New Brunswick to the Pacific, which will be of such importance to the commerce of England. The climate of this district is said to be fertile in the highest degree, and possesses great agricultural capabilities. A considerable portion of this land, which lies between the Cascade Mountains and the Pacific, is subject to a remarkably equal temperament. Snow seldom lies on the ground for a week, and the rains, although frequent, are not heavy. All fruits are as early there as in this country, and grass grows on the top of the hills. The eastern section, however, under the snows of the Rocky Mountains, cannot be praised for its climate, for it is subject to great changes of temperature, going through all the gradations of summer, autumn, and winter in a single day. A numerous body of the Royal Engineers have been fitted out for this colony, who will be employed in making roads, and enforcing the laws which have been passed. A letter to Mr. Bright, M.P. addressed to him by the contractors about to make a railway from Melbourne to Sandhurst, which has been published, says,—"This operation will necessarily find employment for a vast number of hands; and if a thousand masons were to arrive here, we could readily find them employment at 14s. per day. Indeed, if, during the next year, such a body of labour could be placed in the market, competent to work granite, blue-stone, or the yellow free-stone of this colony, they may safely rely on the wages quoted." They refer to their London agents, Messrs. De Pass and Sons, to supply information. They add: "We may also mention, that if one or even two thousand navvies were to come forth, we would readily find work for them at 8s. a day."

STREET FOUNTAINS.—Four or five drinking-fountains are about to be erected in the most public thoroughfares in Leicester; and at Birmingham, the trustees of the Savings Bank have placed a public drinking-fountain in front of that institution, and another at the back entrance in Needless-alley. Another drinking-fountain has been erected in Derby, through the liberality of Mr. Josiah Lewis. It is similar to the one adjoining St. Michael's Church. The site chosen by Mr. Lewis is Lodge-lane, at the top of Willow-row. At the opening of the Liverpool Borough Sessions, the Recorder, in charging the grand jury, noticed the diminution of crime directly referable to drunkenness, and attributed this improvement in social morality to the influence of the public drinking-fountains, recently erected all over the town by Mr. Melly. As we have before said, temperance societies ought to agitate for the bountiful extension of street fountains in every town and village throughout the country. An excellent addition has just been made to one of the "Melly fountains," namely, the receiving of the waste water from the drinking-fountain into an iron trough for cattle, and a smaller trough for dogs. This has been done by a benevolent lady, whose example will no doubt be followed by many others. The Local Government Act of 1858 will prove of great service to towns in respect to public fountains. By section 45, "The commissioners shall cause all existing public cisterns, pumps, wells, conduits, and other waterworks used for the gratuitous supply of water to the inhabitants within the limits of the special Act, to be continued, maintained, and supplied with water, or they shall substitute other such works equally convenient, and shall cause them to be maintained and supplied with water; and such public cisterns and other works shall be vested in the commissioners, and be under their management and control; and the commissioners may construct any number of new cisterns, pumps, conduits, and other water works, for the gratuitous use of any persons who choose to carry the same away, not for sale, but for their own private use, and may supply with water any public baths or wash-houses."

DISINFECTING AGENTS. — In connection with some recent observations in our columns, a correspondent who has had experience of it recommends Collins's "Chlorine Powder," as it is termed. He says it was successfully used in the camp at Aldershot, and at his recommendation was used for some time by the Metropolitan Sewage Commission labourers, for preventing accidents from cleansing out foul sewers, &c.

FRENCH TRIUMPHAL ARCHES.—A new style of architecture has been found in Brittany for the rearing of triumphal arches. We now have the Piscatorial and Agricultural, in place of the Doric or Corinthian. The fishermen of Vannes, on a skeleton of spars spliced in seaman fashion, festooned the whole with nets, trawls, and instruments of their craft, prongs, and boat-hooks; the effect being much admired by the Empress, whose wonder was increased, some posts inland, by passing under an arch built up with wheel-barrows, ploughs, harrows, scythes, and greenery in all branches.

CAMBRIAN ARCHÆOLOGICAL ASSOCIATION.—The twelfth annual meeting of this association began on the 30th of August, and lasted till the 4th inst. The members mustered in good number, under the presidency of the Lord Bishop of St. Asaph. As usual in all meetings of this kind, excursions were made by the association each day to explore the various antiquarian remains of the district, and each evening the members assembled to hear papers and memoirs read, to discuss various topics connected with this peculiar pursuit, and to hear accounts given of the result of every morning's operations. A temporary museum was formed, and contained a small but good collection of charters and other mediæval documents connected with the neighbourhood, a numerous collection of early seals, specimens of armour, coins, early printed books, &c.

GIVE US OUR OWN.—The *Labourer's Friend* for August 31st contains four articles, occupying eight pages out of its sixteen, reprinted from the *Builder* without the remotest acknowledgment. This is doubtless through an oversight, we feel quite sure it is so, knowing how the society is managed, but we think it necessary to point it out that it may be avoided in future. It gives us the greatest pleasure to see articles from our pages reprinted elsewhere: we feel that contemporaries who so far favour us thus increase enormously the value of any efforts, with good ends in view, that may be made by the *Builder*, and we thank them accordingly: but, at the same time, we confess to the weakness of desiring to see the source acknowledged.

METROPOLITAN MAIN DRAINAGE. — We have now before us the reply of Captain Galton and Mr. Simpson, the Government referees, to the "Observations" of Messrs. Bidder, Hawksley, and Bazalgette, on the answer of the former to the report of the latter on Captain Galton and Mr. Simpson's report. It is too late this week, however, to enter into the new "reply." The Government referees in this document assert "that, if the project of the engineers of the Metropolitan Board of Works be adopted, it will, in addition to its first cost, entail a large annual expenditure on the metropolis, without giving that relief which the public have been led to expect."

MUIR'S PATENT FOR WARMING AND VENTILATING.—A patent, of date 13th January, 1858, taken out by Mr. G. W. Muir, of Manchester, relates, first, to forming the pipes through which hot water is made to circulate with flanges; such pipes being placed on the top of fresh-air drains, and made to support tiles with which they are covered; the flanges and tiles having openings through which the air passes from the drain into the place to be warmed;—secondly, to constructing ventilators, or ventilating shafts, so that inward and outward currents are produced and maintained. The shafts may be square, round, or of any other section, and are formed double, that is, one within the diameter or circumference of the other. The outer shaft is divided vertically into compartments, but the inner is not generally so divided. The compartments of the outer shaft may be used for either inward or outward currents, but the inner shaft the patentee prefers to use for outward currents only.

ROYAL MANCHESTER INSTITUTION.—The "private view" of the exhibition of modern pictures and works of art is to take place this Friday, September 10th. The card of invitation drawn by Mr. F. Holding, engraved by Mr. Norton, is a very creditable production, but would have been better if the figures and the foliage had been on the same scale. Mr. E. Salomons is now the Hon. Secretary of the Institution.

CHROMO-PHOTOGRAPHY.—We hear that an invention, likely to create a revolution in the art of photography, has recently been made by Mr. Backshell, of the Photographic Institution, Durham-place, Dalston, and which has received the protection of letters patent. It consists, we are told, in producing a coloured non-inverted photograph.

MR. ROBERT STEPHENSON AND THE WORKMEN AT SUNDERLAND-BRIDGE. — The workmen employed at Sunderland-bridge presented Mr. Robert Stephenson, M.P. and his brother engineers, with an address, on the occasion of his visit to Sunderland, in company with the members of the Institution of Mechanical Engineers. Mr. Stephenson, in reply, said,—"There are no members of society for whom I have a higher respect than for industrious and intelligent workmen. It is to them that the engineer is indebted for the full and efficient realization of his conceptions, which, however good they may be, must largely depend upon the skill of the workman for their success. The progress made in the higher branches of engineering during the last thirty years may be attributed in a great degree to the improved skill and intelligence of the workmen. The advance of mechanical science, and its application to useful purposes, must always go hand-in-hand with the skill and also with the comfort of the working classes. I cannot refer to a better example in proof of this than the bridge upon which we are now standing. The alterations and improvements which you are so admirably carrying on could not have been executed at the time when the original bridge was designed. If the engineer, therefore, had even designed the bridge as it is now intended to be made, his mental labour would have been vain and useless, for there was not sufficient skilled labour in the country to realize such an idea. I merely take this bridge as an appropriate example on the present occasion, because it is a work you are now carrying out under my own directions; but it is only necessary to look around, and we meet everywhere with engineering works to which the remarks I have just made apply in the strictest manner, and reflection on such subjects teaches us to feel that skilled labour is the great fulcrum upon which all our social progress depends, and that the success of this progress is just in proportion to the skill of the labour brought to bear upon the great works so thickly scattered throughout our country."

TENDERS.

For Gosport Defences. Quantities supplied :—

Brassey	£384,413 0 0
Camwell	374,800 0 0
Peto and Co.	340,800 0 0
Jackson and Bean	339,800 0 0
Jackson, Thomas	298,339 0 0
Lawrence	298,300 0 0
Smith	294,800 0 0
Cubitt and Co.	292,600 0 0
Lucas	290,460 0 0
Rigby	283,000 0 0
Lee and Son	278,500 0 0
Nicholson	255,215 0 0
Kelk	253,400 0 0
Myers	248,500 0 0
Kirk and Parry	245,890 0 0
Piper	242,715 0 0

For mason's, bricklayer's, and carpenter's work, in enlarging carcase of Blunsdon Abbey, Wilts. Mr. Edward W. Mantell, architect, Swindon :—

Pedley, Highworth	£3,277 14 0
Barrett, Swindon	3,000 16 0
Holtham, Bath	2,719 0 0

For building a Villa Residence on Balls-hill, Hertford, for Mr. Benjamin Young. Mr. D. Morgan, architect, Hertford :—

Hunt	£2,750 0 0
Lawrance	2,494 0 0
Hitch	2,445 0 0
Webb	2,430 0 0
Glasscock, Stortford	2,415 0 0
Dove, Brothers, London	2,385 0 0
Norris	2,380 0 0
Macey, London	2,319 0 0
Andrews	2,295 0 0
Rayment	2,235 0 0
Collins	2,190 0 0
Allcock	2,161 0 0
Green	2,104 0 0
Coker, Ware (accepted)	1,985 0 0
Millwater, London (came too late)	2,019 0 0

For semi-detached Dwelling, at Hertford, for Mr. J. Fitzgerald. Mr. W. P. Thompson, architect, Quantities taken out by Mr. G. Jones :—

Brown	£1,976 0 0
Simpson and Wright	1,950 0 0
Moody	1,869 10 0
Jenkins and Co.	1,869 0 0
Robinson	1,748 0 0
McNeal and Son	1,694 0 0
Jonas, Brothers (accepted)	1,405 0 0
Sedgwick	1,249 15 0

For repairs to St. Mildred's Church, in the Poultry. Mr. Richard Bell, architect.

Little and Son	£529 0 0
Downs	495 0 0
J. Carter	374 0 0
Taylor	309 0 0
Hall	293 0 0

For the Boundary Walls, Iron Railway, and Excavations, Brecon Cemetery. Mr. H. J. Paull, architect :—

Price and Williams	£400 0 0
Evan Winstone	397 0 0
Griffiths and Son (accepted)	393 15 0
George and Price	373 11 0
Hergest and Sevenoaks	319 5 0*

* Afterwards withdrawn.

For preliminary alterations to the Residence of Mr. H. Hume, Hounslow. Mr. James Tolley, architect :—

Pickard and Co.	£247 6 0
Dew	243 0 0
Hurst	229 0 0
Nias	194 4 0

For the alterations in the London-road for the Marshall Estates. Messrs. E. and G. Burnell, architects :—

	Villar's.	Down's.	Total.
Piper	£492 0 0 ..	£307 0 0 ..	£799 0 0
Wagstaff	399 0 0 ..	255 0 0 ..	654 0 0
Sanders, Brs.	397 0 0 ..	246 0 0 ..	643 0 0
Nicholson	385 0 0 ..	235 0 0 ..	620 0 0
Little & Son	348 0 0 ..	217 0 0 ..	565 0 0

For the erection of two Chapels, and laying out of Grounds at the new Cemetery, Pontefract. Mr. William Kerby, Architect :—

	Allow for an old Building on Site.	
	£ s. d.	£ s. d.
Lindley, Pontefract	50 0 0	1,262 13 4
Pagdins, Ackworth	30 0 0	1,181 19 0
Stow, Leeds	8 15 0	1,200 5 0
Richardson	7 10 0	1,181 10 0
Pratt, Bradford	.. ..	1,136 0 0
Wilkins, Pontefract	.. ..	1,109 0 0
Fenton and Myers, Knottingley	.. ..	1,055 0 0
Lee and Ashton, Retford	40 0 0	1,017 0 0
Lister, Knottingley	20 0 0	1,004 4 0
Cameron, Barnsley (accepted)	20 0 0	860 0 0

TO CORRESPONDENTS.

"Colouring buildings," X. Y. would be glad to know the best mode for colouring the restoration of a cathedral to imitate the old work.—C. R. S.—Amateur (lath and plastered underneath would obviate the evil in respect of zinc and lead).—E. C. (If Mr. C. were a reader of the *Builder*, he would not have mis-stated our comment so absurdly as he has done).—W. M.—W. K.—G. T.—One that knows two or three things (letters to the same effect were already in type).—J. G.—Delta.—L. C. H.—D. G. (thanks).—J. T.—W. P. (yes).—D. M.—P. B.—Titus.—Messrs. A.—H. J.—D. and Son.—T. S. (letters to same effect were in type previously).—S. E. B. (ditto):—W. R.

"BOOKS AND ADDRESSES."—We are forced to decline pointing out books or finding addresses.

☞ *NOTICE.—All Communications respecting Advertisements and Subscriptions should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and* NOT *to the "Publisher."*

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

[ADVERTISEMENT.]

SELF-COILING CONVOLUTED SHUTTERS.—The utility of Revolving Shutters for closing windows and other openings is universally acknowledged; but the cost has hitherto prevented their general adoption. Messrs. CLARK and CO. of 15, Gate-street, Lincoln's-inn, have recently introduced a new Self-coiling Revolving Shutter, which, in addition to being one-half the expense, has the advantage of being remarkably simple, and consequently less liable to get out of order. All the complicated gearing apparatus is dispensed with: there are neither wheels, shafts, rollers, cords, nor weights, to become deranged.

The Patent Self-coiling Shutter is composed of laths in metal or wood, which are connected by bands, or strips of tempered steel, that form the connection between the laths, and also cause them to coil, or roll themselves up into a circular space, above, below, or on either side of the window: grooves are formed in which the ends of the laths slide, and when the shutters are closed, keep the springs straight: the springs also counterbalance the weight of the shutters, which are opened and closed with the greatest facility. We are disposed to think they will be largely used, both for shop-fronts and private houses. Much of the difficulty now often found in providing shutters for large bow windows may be obviated by their use, without extra cost.—*From the Builder, June 26th*, 1858.

ADVERTISEMENTS.

"THE BUILDER," Vol. I. WANTED. Also Number for JANUARY 5, 1856.—Apply at the Office, 1, York-street, Covent-garden.

IMPORTANT OPPORTUNITY.—150*l*.—JOINT PARTNERSHIP.—A well-established MANUFACTURING BUSINESS of IMPERISHABLE STONE-WORKS, with Architectural Embellishments.—Owing to the death of his son, the proprietor is not able to conduct the business with the country orders. Yearly income, 400*l*. No risk, and ready-money business.—Address, W. H. R. Post-office, Camberwell-green.

TO PARENTS AND GUARDIANS.

AN ARTICLED PUPIL is required by an Auctioneer and Surveyor, in good practice, about four miles from the City.—Address, DELTA, care of Mr. Jaques, Auction Mart, E.C.

APPRENTICE WANTED, in the CHURCH DECORATION and STAINED-GLASS BUSINESS.—Apply to Messrs. FRASER and MAY, Solicitors, 78, Dean-street, Soho. Premium required.

CARPENTER WANTED, for a permanent SITUATION: must be steady and thoroughly understand his business, and capable of taking the lead of half-a-dozen men. A reference of long service and ability expected; good wages.—Address, CLARK and CO. Patent Shutter Works, Gate-street, Lincoln's-inn-Fields.

WHITECHAPEL UNION. — SECOND PORTION of NEW WORKHOUSE.—The Guardians are desirous of obtaining the SERVICES of a thoroughly efficient and practical PERSON, to SUPERINTEND the ERECTION (under the Architect, Thomas D. Barry, esq.) of the SECOND PORTION of their NEW WORKHOUSE, in Charles-street, Mile-end New Town, in this Union. The salary proposed is 2*l*. 12s. 6d. per week, and the person appointed will be required to devote the whole of his time to the performance of the duties of the office.—Applications in writing, accompanied by testimonials, are to be sealed up, endorsed "Application for Clerk of Works," and delivered at the Board-room, at this Workhouse, before SIX o'clock in the afternoon, on TUESDAY, 21st SEPTEMBER, 1858, where candidates are personally to attend.—By order, G. ADAMS FARR, Clerk.
Clerk's Office, Workhouse, September 8, 1858.

TO CLERKS OF THE WORKS.

WANTED, early in OCTOBER, a CLERK of the WORKS, to superintend the ERECTION of a LUNATIC ASYLUM, near Carlisle.—Terms and references to be sent to JOHN A. CORY, County Surveyor, Carlisle, on or before the 10th of SEPTEMBER.

TO ALABASTER POLISHERS.

WANTED, THREE or FOUR very FIRST-CLASS HANDS. None need apply who have not had considerable experience in both plain and ornamental work. Permanent employment.—Address, stating wages, to A. F. Post-office, Leicester.

TO CLERKS OF WORKS.

WANTED, to SUPERINTEND WORKS in London, a PRACTICAL PERSON, who has had great experience in Warehouse and Waterside Buildings.—Applications, by letter, accompanied by references as to character and ability, to be addressed to A. Z. B. Jamaica Coffee-house, Cornhill.

TO PLUMBERS AND GAS-FITTERS.

WANTED, a Young Man, who is a good PLUMBER and GAS-FITTER. — Apply to TYE and ANDREW, Plumbers, Gas-Fitters, and Decorators, 5, Spencer-place, Brixton-road, near Kennington Church.

WANTED, in an Office in the country, an ASSISTANT, who has had considerable experience in construction, and in detail and working drawings.—Apply, stating terms and previous engagements, C. Z. Office of "The Builder."

TO MANUFACTURERS OF SEWERAGE PIPES, &c.

WANTED, by a Young Man, who thoroughly understands the practical department, and is a good book-keeper, a SITUATION as GENERAL MANAGER of WORKS. Moderate salary required, the object being a good and permanent situation.—Address, C. G. Post-office, Leicester.

TO ARCHITECTS, &c.

WANTED, by a Young Man, aged 20, who has just completed his articles, an ENGAGEMENT in an ARCHITECT'S OFFICE, where he will have an opportunity of improving himself. He is a good draughtsman, understands levelling, surveying, &c. London preferred. Salary moderate.—Address, M. F. T. Post-office, Bridge-street, Sunderland.

TO PLUMBERS, BUILDERS, AND OTHERS.

WANTED, by a first-class PLUMBER, a constant SITUATION. Has a good knowledge of gasfitting; no objection to fill up his time with glazing. Town or country. Good reference.—Apply, stating terms, to J. C. 4, Mcards-street, Dean-street, Soho, London.

WANTED, a SITUATION as GENERAL FOREMAN or CLERK of WORKS, by a Middle-aged Man, having a practical knowledge of the different building trades; can make detail and working drawings, and execute the principal portions of joiners' work; locality no object; reference given.—Address, Z. Q. 5, Serjeants-inn, Fleet-street, London.

TO BUILDERS.

WANTED, by the Advertiser, a Young Man of great experience, and who has been accustomed to machinery, a SITUATION as WALKING FOREMAN, or FOREMAN of JOINERS. References unexceptionable.—Address, A. C. 7, Old Rutland-street, New-road, Commercial-road, E.

WANTED, by a Young Man, a SITUATION as WORKING FOREMAN, or otherwise. Understands paper hanging, painting, glazing, glass cutting, and can turn his hand to jobbing, plumbing, and the trade generally. Wages, 27s. per week. Address, H. Y. at Mr. Drapper's Asylum Coffee-house, Old Kent-road.

TO BUILDERS, &c.

WANTED, a RE-ENGAGEMENT, as SHOP FOREMAN, or to take charge of a Job, by a thoroughly practical carpenter and joiner. Accustomed to take out quantities, and prepare plain and working drawings. Unexceptionable references can be given.—Address, Z. O. Office of "The Builder."

TO PLUMBERS AND BUILDERS.

WANTED, by a young Man, a SITUATION as PLUMBER and GAS-FITTER. No objection to fill up his time with painting. Either in town or country.—Address, J. TURNPENNY, No. 3, Rochester-place, South Lambeth New-road.

TO ARCHITECTS, SURVEYORS, AND ENGINEERS.

WANTED, by a thoroughly competent and experienced Assistant, an APPOINTMENT either in the office or to take CHARGE of WORKS at home or abroad. First-class references can be given.—Address, R. A. Office of "The Builder."

TO PLUMBERS.

WANTED, by a steady Plumber, CONSTANT EMPLOYMENT. No objection to fill up time with painting or glazing; reference from last employer.—Address to G. S. No. 20, Stangate, Westminster-bridge, London.

WANTED, by an experienced hand, a SITUATION as GAS-FITTER, or to do the work of a small country gas works.—Address, A. Z. O. Mrs. Barrett's, News Agent, 94, Dean-street, Soho.

TO ENGINEERS, ARCHITECTS, AND SURVEYORS.

WANTED, an ENGAGEMENT, by a Gentleman, 30 years of age, who has been for some years in an Engineer's Office, and has superintended the erection of several public buildings. Is a good draughtsman, can make out working drawings, specifications, &c.; a good accountant, and thoroughly conversant with office business.—Address, C. E. B. Office of "The Builder."